The Case for Ducted Electric Heating . . . . Pg. 18

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Year-Round System Operation Studied By Air Force

WASHINGTON, D. C. — Extensive studies of the operation of year-round residential air conditioning systems at six bases of the U. S. Air Force now being conducted are expected to provide information useful in predicting operating costs and designing systems.

Final results will not be available until late in 1961, according to an Air Force spokesman.

A report on studies at one of the bases—Little Rock—may be released independently next spring, however, by Arkansas Power & Light Co., indicates W. M. Sheperd, vice president of the utility.

There is some doubt in the minds of private industry whether the data to be developed in the Air Force studies
(Continued on Back Page, Col. 4)

Frick Decentralizes Sales, Service Responsibility

WAYNESBORO, Pa. — Frick Co. inaugurated Oct. 1 a new regional sales program to decentralize sales and service responsibility, M. M. Gouger, executive vice president, announced recently.

The program establishes five regional offices and realigns top sales management personnel, Gouger said.

Regional managers will have the responsibility and authority to supervise and direct the activities of the branches and distributors within their respective regions and to carry out national sales plans.

Advantages of the plan, according to the company announcement, include the admin-
(Continued on Page 4, Col. 1)

Peerless Corp., Ga. Firm Merge

INDIANAPOLIS—Harold W. Mutz, president of Peerless Corp. here, and Laurence F. Kent, president of Moncrief Furnace Co. of Atlanta, have announced the merger of their two companies.

The Atlanta firm will be operated as a subsidiary of Peerless Corp. It will continue operations under present management at its new plant at 935 Chattahoochee.

Moncrief Furnace, which manufactures small air conditioning units and prefabricated pipe and fittings, is not connected in any way with the Henry Furnace Co. of Medina,
(Continued on Back Page, Col. 1)

Frigidaire 1961 Room Units Designed Especially for 3 Types of Rooms

NEW YORK CITY — In a move described as "erasing the 'mystery' connected with choosing a room air conditioner," Frigidaire Div. of General Motors Corp. has designed and designated its 1961 units specifically for three types of home installation — for bedroom, living-family room, or multi-room.

Herman F. Lehman, GM vice president and head of Frigidaire, announced that the 1961 line consists of 10 basic models with cooling capacities ranging from 6,000 to 19,000 Btu.

He pointed out that by having room units designed to do a specific cooling job in the home on a room-by-room basis, much of the confusion surrounding proper selection of a unit can be eliminated for both the dealer and customer.

"The majority of people interested in improving their homes with room air conditioning equipment are not buying Btu, but comfort," Lehman ex-
(Continued on Page 27, Col. 1)

Cool Schools

Educators To Study Them In Fla.

TALLAHASSEE, Fla.—State School Superintendent Thomas Bailey has announced that the U. S. Office of Education has approved a $57,495 Federal grant for a research study in a Pinellas County air conditioned school.

"The funds will be used by the State Education Dept. and the Pinellas County school system to study effects of school air conditioning on attendance, educational effectiveness, building utilization, and plant maintenance and operation," Bailey stated.

"Two similar schools are under construction in Pinellas County," he continued. "Both have the same education purpose and were planned as nearly identical as possible with the same number and type of rooms and construction materials. (See page 2, May 23 issue of NEWS.)

"However, one school, Pinellas Park, is of conventional design, meeting natural lighting and ventilation requirements and planned to take advantage of the Florida sunshine and cooling Gulf breezes.

"The other school, Oak Grove, will be air conditioned and the design is a radical departure from conventional schoolhouses.

"By using air conditioning, architects were able to design a more compact school, with fewer walkways and corridors and without concern for natural lighting and ventilation.

"The construction contract of $664,082 for the air conditioned school was $16,696 less than the construction contract of $680,778 for the conventional-type school.

"This indicates savings can be achieved in school construc-
(Continued on Page 27, Col. 5)

Find Buildings Cost Less In Texas

SAN ANGELO, Texas — The local Board of Education's experience with school air conditioning indicates that completely cooled schools can be built for not more, and perhaps less, than conventional buildings not air conditioned, according to G. B. Wadzeck, superintendent, San Angelo Public Schools.

Air conditioned when built were two elementary schools, a high school, and an addition to an elementary school. Replying to a request from the NEWS for comment on experience with these schools, Wadzeck stated:

"As you know, the Belaire Elementary School in San Angelo was the first or one of the first schools that was planned from its inception as an air conditioned school.

"This school was bid the same as four others and came in on bids slightly less per square foot than the semi-compact non-air conditioned school at $1.50 per square foot less than the finger-type building.

"After evaluating this, the
(Continued on Page 27, Col. 5)

Propose Test In Kentucky

LOUISVILLE, Ky.—The Jefferson County school board was asked recently to spend $103,000 to air condition a new high school to be built by September, 1961.

Board members are studying cost and feasibility of the project and are expected to vote on it soon.

The idea of an air conditioned high school was suggested by School Superintendent Richard Van Hoose.

He believes such a school would offer special opportunities to students who wish to broaden their high school education by taking subjects they cannot fit into their regular academic schedule and to students who have failed to make up their work and get remedial help.

Jefferson county, until this year, has not had a summer school program. One school
(Continued on Page 27, Col. 4)

Outside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Moon Cemetery

When America does succeed in rocketing to the moon with accuracy and regularity, Hawaiians will have a practical use for that celestial real estate.

They need it right now, as a matter of fact, for a burial ground. So valuable and so limited is Hawaiian acreage that costs of cemetery plots are becoming prohibitive.

Moreover they comprise "nonproductive land use."

And in the future, whew! Theoretically, if every Hawaiian is to be buried in the 50th state, in the sometime hereafter all Hawaii would be nothing but cemetery.

Thankfully, there is one helpful factor. These people love the sea which surrounds them, and many stipulate that their ashes be strewn into the Trade Winds above it.

Population pressure on this naturally limited real estate is worrisome. By 1980, it is estimated, inhabitants of the friendliest isles will have doubled, and then some.

They're crowding one another even now.

Mood Music

Hawaiian music is pretty special, and especially enchanting. All the world loves Queen Lil's farewell *Aloha Oe;* and the Hawaiian War Chant is hammered out by vocal and instrumental ensembles everywhere.

Ukuleles and the fretless *glissando* steel guitar are Hawaiian contributions to the gaiety of nations, also.

But these simple tunes—and instruments—can't compare with *Ke Kali Ne Au* done in "slack key" by Beach Boys in the moonlight.

What is "slack key" strumming? This writer isn't musician enough to explain. All he can say is that it's haunting, and it has something to do with the way those guitars are tuned, and with an odd-beat syncopation.

How the Beach Boys do it simply isn't fathomable. Profes-
(Continued on Page 8, Col. 1)

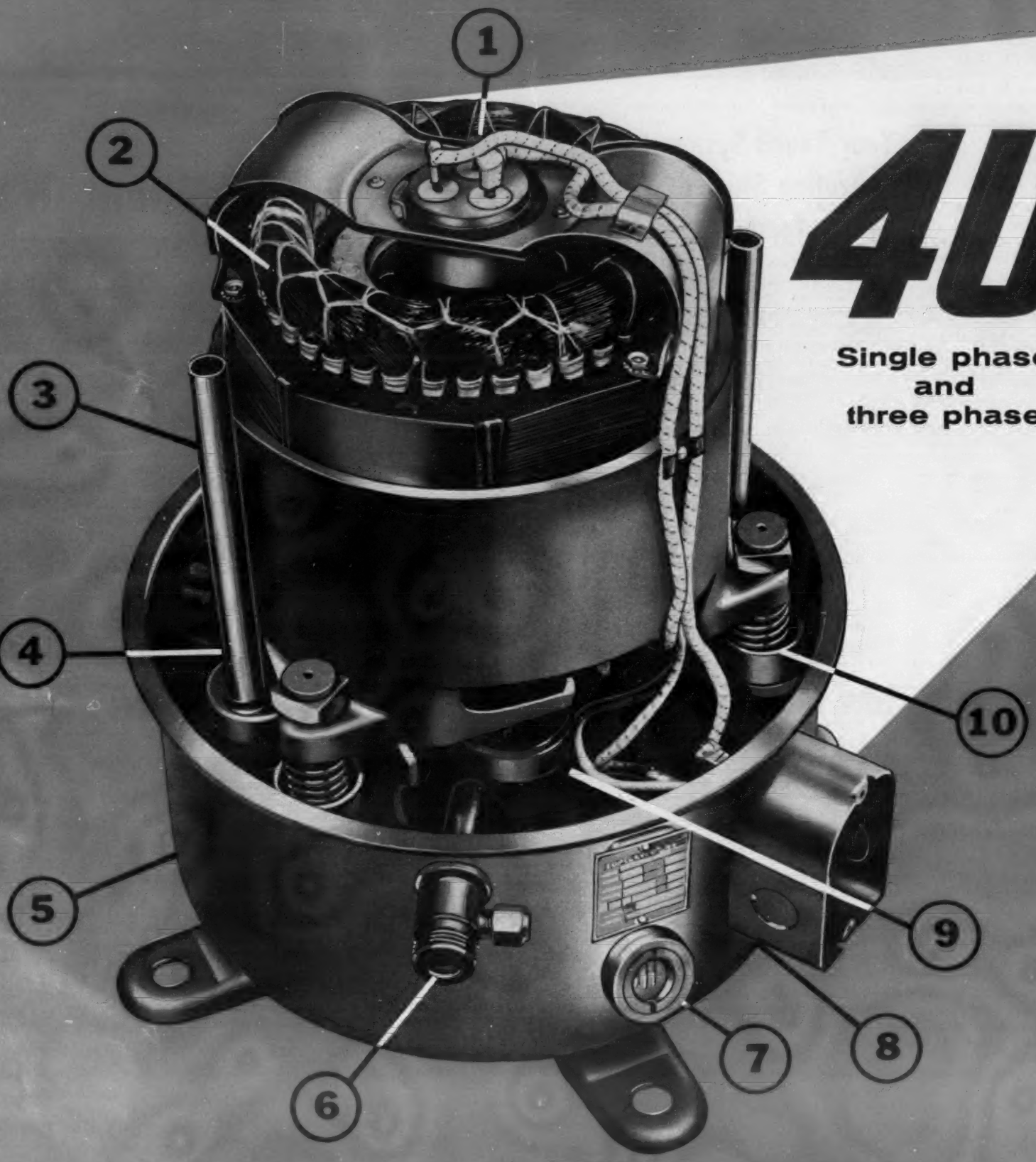
York Promotes T. J. Ammel

YORK, Pa.—T. J. Ammel has been named sales manager, O.E.M. and Mobile Products, for the York Div., Borg-Warner Corp., it was announced by Austin Rising, vice president and director of marketing.

T. J. Ammel

In this capacity Ammel assumes responsibility for supervision of sales and product development for compressors,
(Continued on Back Page, Col. 1)

BETTER PERFORMANCE



4U

Single phase and three phase

4U Copelaweld WELDED HERMETIC MOTOR-COMPRESSORS

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2. Heavy duty motor
3. Swedish steel valve reeds
4. One-piece body casting
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8. Oil drain plug
9. Lightweight aluminum connecting rods
10. Internal spring mountings

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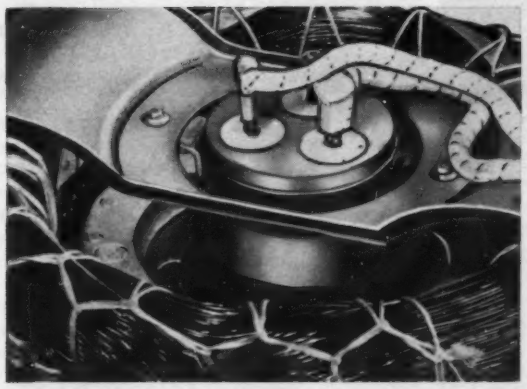
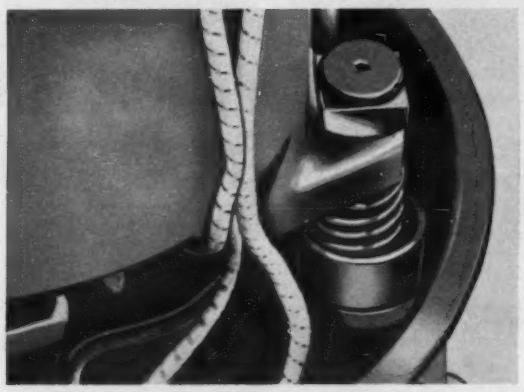
Copelaweld features pack more value than ever into air conditioners and heat pumps

4 cylinders • 1750 R.P.M.
2½ H.P. • 3 H.P. • 3½ H.P.
4 H.P. • ...and now 5 H.P.



INTERNAL, INHERENT MOTOR PROTECTION

An industry first! Copelaweld inherent protection is internal, hermetically sealed . . . cannot be tampered with, by-passed or changed. No pilot circuit required . . . no current or temperature-sensitive devices outside the compressor shell. Close proximity of protector to motor provides superior locked-rotor and running protection and is independent of external ambient conditions.



QUIET, VIBRATION-FREE OPERATION

A new standard of smooth, quiet operation made possible by an unmatched combination of features: 1750 R.P.M.; four cylinders, 90°V, one discharging each 90° of rotation; and cast-in discharge muffler. Internal spring mountings isolate sound and vibration within the compressor shell. No need for costly suction and discharge vibration absorbers in most installations.

ENGINEERED FOR LONG DEPENDABLE LIFE

Lasting dependability, traditional with all Copeland products, is built into Copelaweld motor-compressors. Contributing to long life expectancy are: aluminum connecting rods for low reciprocating weight; valve plates of proven design; positive lubrication to all rotating bearing surfaces; and generously-sized, high-torque motors. Equipped with oil sight glass and drain plug.

Welded Hermetics, Accessible Hermetics or Belt-Driven... COPELAND has what it takes!

For complete specifications and performance data on the Copelaweld line of "4U" motor-compressors, request Bulletin No. 6026. Call or write direct.

SINCE 1918 **Copeland** REFRIGERATION CORPORATION, Sidney, Ohio

Manufacturers of performance-proved motor-compressors and condensing units for air conditioning and refrigeration

Frick Decentralizes Sales, Service--

(Continued from Page 1, Col. 2)

istering of company policies with immediate and positive actions at or nearer point of sale, enhancing operating efficiency of existing and new branch offices, strengthening present distributor organization and creating a cooperative team of branch and distributor personnel, and the combining of existing branch offices and unassigned areas into one organized region with a united purpose.

D. J. Wood

At the home office, David J. Wood, formerly manager of market planning, has been appointed manager national sales to head the new program. He will also supervise market research and planning and will report to the executive vice president.

George C. Briley has been named manager national sales, field sales and service. All regional sales managers will report to Wood through Briley. Before joining Frick, Briley was a regional sales manager at Houston, Texas for another air conditioning company.

David E. Eddy has been advanced to assistant manager national sales-technical services. His principal responsibilities will be application engineering, estimating, and ordering for the regional and distributor organization.

Warren L. Bain will continue to function as assistant manager of national sales for administration.

R. C. Robertson

J. T. Sanders

A. J. Vandermade

R. H. Dyson

The five new sales regions are labeled northeastern, eastern, central, southern, and western.

Northeastern region covers all the New England states, New York, and the northern part of New Jersey. Robert H. Dyson, previously vice president and general manager of Canadian Ice Machine Co. and president of R. H. Dyson Co., a Toronto contracting firm, is the new regional manager with headquarters in New York City.

John T. Murphy, formerly New York branch manager, will continue as advisor to Dyson, while Raymond A. Ebner moved up to New York branch manager. Alan J. Beverley, formerly with Canadian Ice Machine Co. becomes branch manager of the Boston office.

Eastern region covers Pennsylvania, Maryland, Virginia, West Virginia, the southern part of New Jersey, and the eastern part of Ohio. No regional manager has yet been named. Branch managers at Pittsburgh, Washington, D. C., Waynesboro and Philadelphia retain their posts. Region headquarters will be in Washington, D. C.

Central region extends from Michigan, western Ohio, and Kentucky westward through the Dakotas, Nebraska, and Kansas. Robert C. Robertson, formerly vice president and director of sales for Acme Industries, Inc., has been appointed regional manager with headquarters at Skokie, Ill.

Bert Martin, formerly manager of product planning for Acme Industries, will head the new Chicago branch. Other branches in the region are at Cincinnati, St. Louis, and Kansas City.

The southern region covers all southern states from the Atlantic seaboard through Texas and Oklahoma. John T. Sanders, III, former domestic sales manager, has been named regional manager and will establish his headquarters in Houston. Branches in the region are located at Atlanta; Charlotte, N. C.; Orlando, Fla.; Memphis; Dallas; and New Orleans.

Western region covers the 11 western states, Alaska, and British Columbia. It will be headed by Alan J. Vandermade, formerly branch manager at Palo Alto. He will retain his headquarters there.

William F. Losch, with over 52 years' continuous service with Frick Co. and formerly Los Angeles branch manager, will act as advisor to Vandermade.

Losch will be succeeded at Los Angeles by Blair M. Barnitz, formerly with Niagara Blower Co.

Gouger, in announcing the new setup, said, "In time we will have our own installation and service facilities, sales engineering people, and probably warehousing organized at the regional points."

While the regional plan is expected to strengthen the branch offices, Gouger said, it will also enable the company to strengthen and enlarge its present network of about 80 major distributors.

Boggs, Reed Attend ISO Meeting In Paris

PARIS, France — Andrew Boggs III, technical secretary of the American Society of Heating, Refrigeration & Air-Conditioning Engineers, and Fred J. Reed, chief engineer of Air-Conditioning & Refrigeration Institute, are attending the Paris meeting of the International Standards Organization.

R. E. Densmore

MIAMI, Fla.—R. E. (Deny) Densmore, a pioneer in the household refrigeration field, died recently at the age of 83.

He started with Kelvinator in the early 1920's and was with Norge from 1928 to 1941. After retiring as a sales executive, he lived in Hot Springs, Ark.

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning, Heating & Refrigeration News, 450 W. Fort, Detroit 26, Mich. Only 25¢ each.

LOW-COST, EASY TO INSTALL, EASY TO SERVICE LINE

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for Back Bars, Reach-Ins,
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Under-Counters, Low Boys

TENNEY all-new,

all-aluminum mx unit coolers

- RUSTPROOF, LIGHTWEIGHT ALUMINUM CASE
- COIL CONSTRUCTION completely non-ferrous
- MINIMUM PRESSURE DROP CIRCUITING, conservative ratings
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Write for Bulletin 118-58

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1090 SPRINGFIELD ROAD, UNION, NEW JERSEY • PLANTS: UNION, N. J. AND WILMINGTON, N. C.

General Electric Stereo and General Electric high quality air conditioning join hands in helping boost fall sales for you. You may offer this beautiful G-E Stereo Portable that plays all records through balanced sound system Free (Mfr's. suggested retail price $129.95) with each installation of General Electric Central System Air Conditioning. This offer is supported by a full-scale advertising and sales promotion kit for dealer use.

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GENERAL ELECTRIC

Air Conditioning Dept., Tyler, Texas

ACN 10-17

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GENERAL ELECTRIC COMPANY, Air Conditioning Dept., Tyler, Tex.

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- ☐ Commercial and industrial air conditioning.
- ☐ Both.

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Firm _____

Address _____

City _____

County _____ State _____

Big Discount Store Gets Air Conditioning Without Sacrificing Inch of Sales Space

SHEWSBURY, Mass.—To air condition Spag's, one of the largest discount stores in the Worcester area, called for a good deal of engineering perception from Glen Umphrey, salesman and design engineer for Eastern Climate Control Corp. of Worcester.

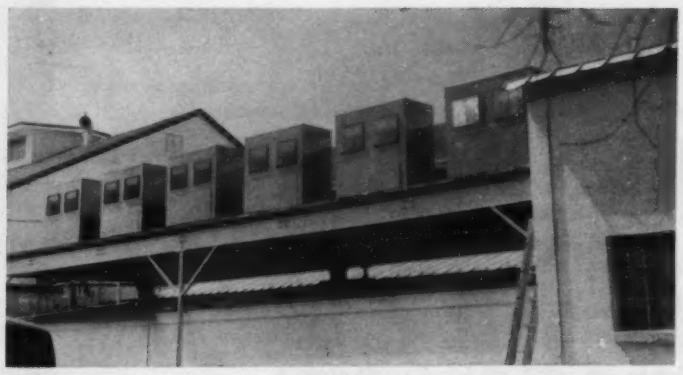
The store here is in reality two large buildings joined by several small ones. In total, they required 90 tons of cooling. In designing the installation, Umphrey faced these problems:

1. No sewerage was available in the area, making installation of air-cooled units mandatory.

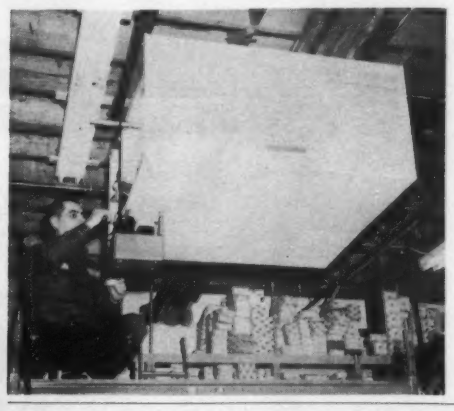
2. Large, unsightly ductwork was not desirable as it would mar the inside appearance.

3. Not an inch of selling space could be sacrified for the units.

4. No ground space outside the building was available to house the condensing units.



SOLVING SPACE PROBLEM at Spag's discount store in Shewsbury, Mass., 12 7½-hp condensing units are mounted on a platform atop a small connecting building between the store's two large main buildings.



ONE OF A DOZEN Airtemp evaporator blower units suspended from the store's ceiling that cool the jerry-built structure without taking up an inch of selling space.

Umphrey solved the interior installation problem by having 12 Airtemp evaporator blower units, models 1468-1489, strategically located to provide maximum cooling in the concentrated customer area.

All of the units, with the exception of two, are free-blow in order to eliminate ductwork. Two of the units necessitated extended ductwork in order to minimize an excessively long refrigerant run.

Large numbers of customers during the Christmas shopping season require cooling for the store and two of the evaporator blower units were directly connected to the outside by ductwork. This permits the introduction of outside air into the store during the winter months.

The floor space problem was solved by hanging the units from the ceiling.

On the exterior, a steel platform was built above the roof of the small building which coupled the two main structures. Twelve Chrysler air conditioning condensing units, model 1208, were uniformly lined up in two rows of six each to harmonize with the outside lines of the store and solve Umphrey's fourth installation problem.

A special panel was designed so that only two authorized persons could operate the entire system.

From this central control panel, each unit may be operated individually, having the option of cycling the fan or running it continually.

Temperature is controlled by a thermostat mounted in the return air stream of each unit to give 12 zones of cooling in the store.

On the fresh air units, two thermostats were used, wired in parallel. If the outside temperature is above 65° or the indoor temperature is above the room setting, the compressor will operate. This system permits an automatic control so that the compressor will not be operating when outdoor temperature is sufficient to cool the area.

Installation was supervised by Arthur W. Gustavson and the foreman for Eastern Climate Control Corp. was Robert Benoit.

Tom: Don't wait!
Call H&H
about our
spring
Air Conditioning
needs NOW
P.
To take full advantage of the design, the counselling and the many other services which H & H has to offer, you are urged to examine your spring air conditioning needs *now*. If, for example, the grain size you want is unusual, obtaining it will likely take extra care. But by getting together with H & H lab men *now*, delivery of the tubing or parts you want exactly when you want them, will be definitely guaranteed.
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air conditioning
BY PASS VALVE
Simplifies installing fan-coil or induction type air conditioners. Only ¼ size of average valve cluster, it combines function of inlet-outlet valves and flushing valves. Available with ½" or ⅝" solder or flare connections.
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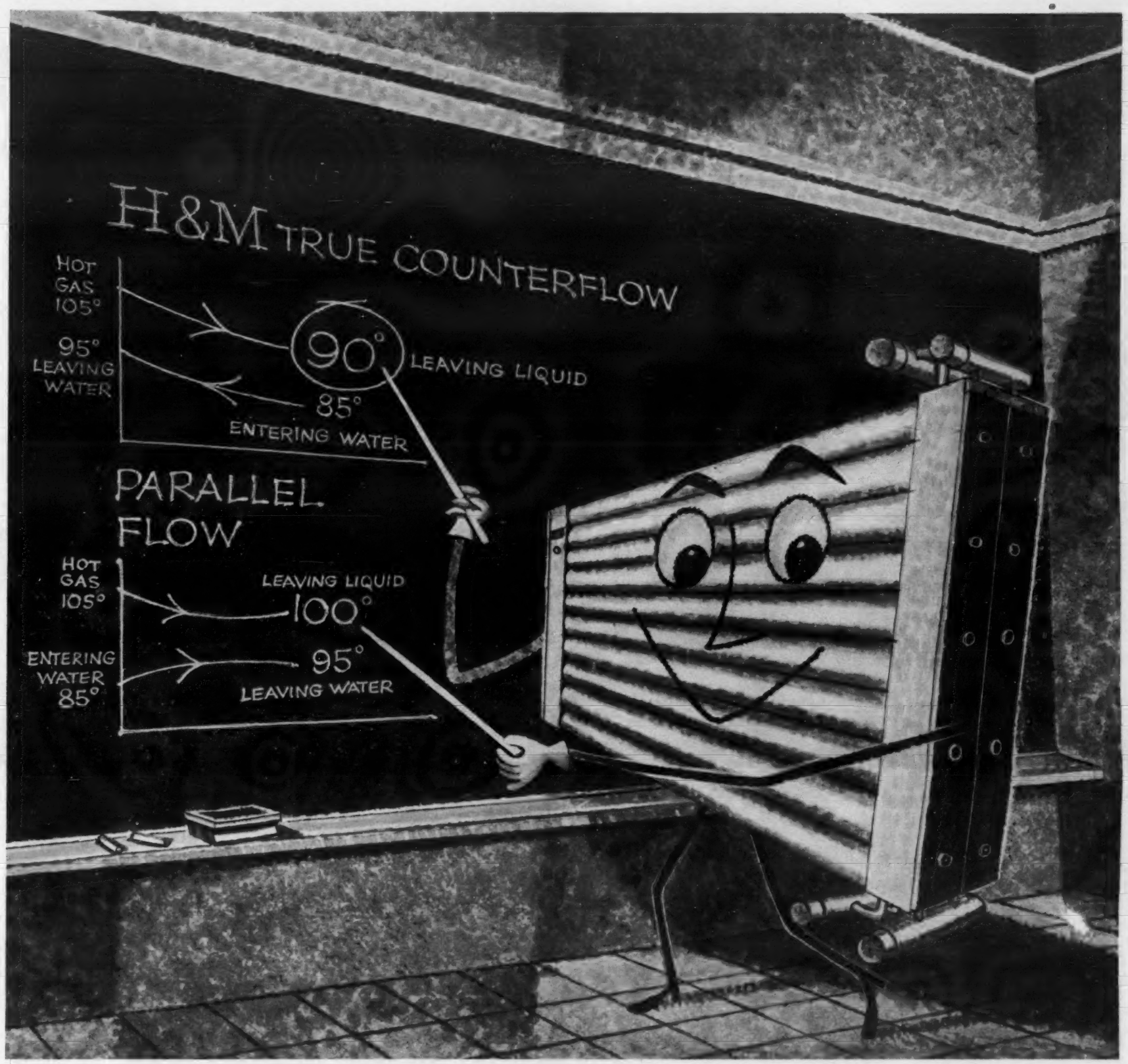


BEFORE YOU BUY, THINK:

Will you get adequate subcooling from your condenser?

You will if it's an H&M water-cooled condenser with true counterflow heat exchange

In Halstead & Mitchell water-cooled condensers the refrigerant and cooling water are introduced in true counterflow, as shown in the chart. Test results indicate an average of 15 degrees of subcooling in H&M condensers. Liquid refrigerant leaves at a lower temperature and system capacity is increased about ½% for each degree of subcooling without additional power input.

H&M condensers feature double-tube design, seamless copper tubing, brass headers. End plates are easily removed for quick, safe, *mechanical* cleaning. Water tubes are generously sized for low pressure drop and minimum maintenance. Available in ½ to 25 ton capacities, condenser types are Standard (½" and ⅝" O.D. water tubes), Heavy Duty (⅝" O.D. water tubes), and Sea Water (⅝" O.D. cupro-nickel water tubes), and are U/L approved. Order them from your refrigeration wholesaler and use them singly or on racks. Halstead & Mitchell, Bessemer Building, Pittsburgh 22, Pa.

H & M WATER-COOLED CONDENSER WITH TRUE COUNTERFLOW

HM Halstead & Mitchell

Water-Cooled Condensers • Cooling Towers • Air-Cooled Condensers • Finned Coil Products

Outside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

(Continued from Page 1)

sional musicians from the Mainland haven't been able to duplicate their rhythms, atonal scales, or performances.

Cultural activities in Hawaii range far beyond the *cliche* image of ukuleles and hulas, however. Instances:

The 90-piece Honolulu Symphony Orchestra, supported by public subscription, offers fall and winter concert seasons and a summer "pops" series. Internationally acclaimed guest artists spice its programs.

The Honolulu Academy of Arts exhibits notable collections of Oriental, European, and Polynesian art works regularly.

The Bernice P. Bishop Museum, founded in 1889 for the collection of artefacts from the islands of the Pacific Ocean, has gained international recognition as a center of Pacific ethnological research.

Eminently seeable are legitimate stage efforts—exemplified by the Honolulu Community Theater and the University Theater.

The former often secures rights to Broadway productions well ahead of mainland counterparts; the latter is beginning a Great Plays cycle.

No Strain In Tolerance

Religious faiths of almost every type flourish. Participants worship in cathedrals, churches, synagogues, shrines, and temples—often colorfully.

Politically, Hawaiians are independent, unpredictable. They vote for A Man, rather than The Party.

Exporting Peaceful Aspirations

Several Hawaiian firms have worldwide interests nowadays.

American Factors, Ltd., for example, is improving millions of acres in Western Australia. This Esperance Plains project eventually will be transformed into citrus ranches, no doubt with profit to all concerned.

Honolulu Gas Co. management personnel are setting up a natural gas distribution system in Anchorage, Alaska.

Hawaiian Agronomics Co. International, a wholly owned foreign subsidiary of C. Brewer & Co., is responsible for a sugar cane operation in southern Iran, where seed has been planted on 5,000 acres.

One of the largest world-wide operations based in Honolulu is the Hawaiian Dredging & Construction Co., Ltd. This company is working all over the Pacific, in Asia, and in the Near East.

It has a $23 million contract with the Shaikhdom of Juwait on the Persian Gulf to erect a giant harbor project, for instance.

Also it is conducting an $18 million joint venture with the Suez Canal Authority (an Egyptian government agency) to widen and deepen the entire 105-mile length of the Suez Canal.

Another Hawaiian Dredging project in the Near East is an $11 million contract with the government of Saudi Arabia to construct docking facilities on a man-made island in the Persian Gulf.

Gooney-bird Guam is being face-lifted (and high time!) by several Hawaiian corporations, notably E. E. Black, Ltd., which has started a gigantic housing project on that lonely Pacific pinpoint.

And Honolulu's Theo H. Davies has a subsidiary (Davies, Far East Ltd.) in Manila which for many years has been promiment in manufacturing, merchandising, insurance, and steamship business there.

You can't call the Hawaiian Islands "insular" any more.

They Enrich Our Dining Tables

Succulent exports from our gorgeous 50th State include pineapples, papayas, bananas, macadamia nuts, cantaloupes, watermelons, avocados, oranges, and tangerines.

Macadamia nuts, for an interesting ferinstance, have tripled since 1950 in acreage, production, and export value. Processing of guava, papaya, and passion fruit for the export trade also is on the rise.

Along the fruit line, an interesting new industry is flourishing on the Big Island (Hawaii itself). There, a $300,000 plant has been built to process vitamin-bursting acerola.

Agrarian scientists have discovered that acerola juice contains 60 times as much Vitamin C as is found in orange juice.

On Oahu there's a commercial enterprise which converts bananas into candy. A stick is inserted into each banana, which thereupon is coated with chocolate syrup and nuts, and frozen into a vendable "bananasikl."

These frozen Bananadips are sold in food stores, military commissaries, school cafeterias—and probably will be exported tomorrow morning to the world's supermarkets.

Relax and Enjoy It

Polynesian feasts (luaus)—even though they've become commercialized—are an experience you'll always remember.

Participants sit uncomfortably alongside ankle-high tables laden with pork, salmon, and beef wrapped in ti leaves; chicken stewed in coconut milk; poi (which looks and tastes like billboard paste); baked bananas and breadfruit; fresh coconuts and pineapples.

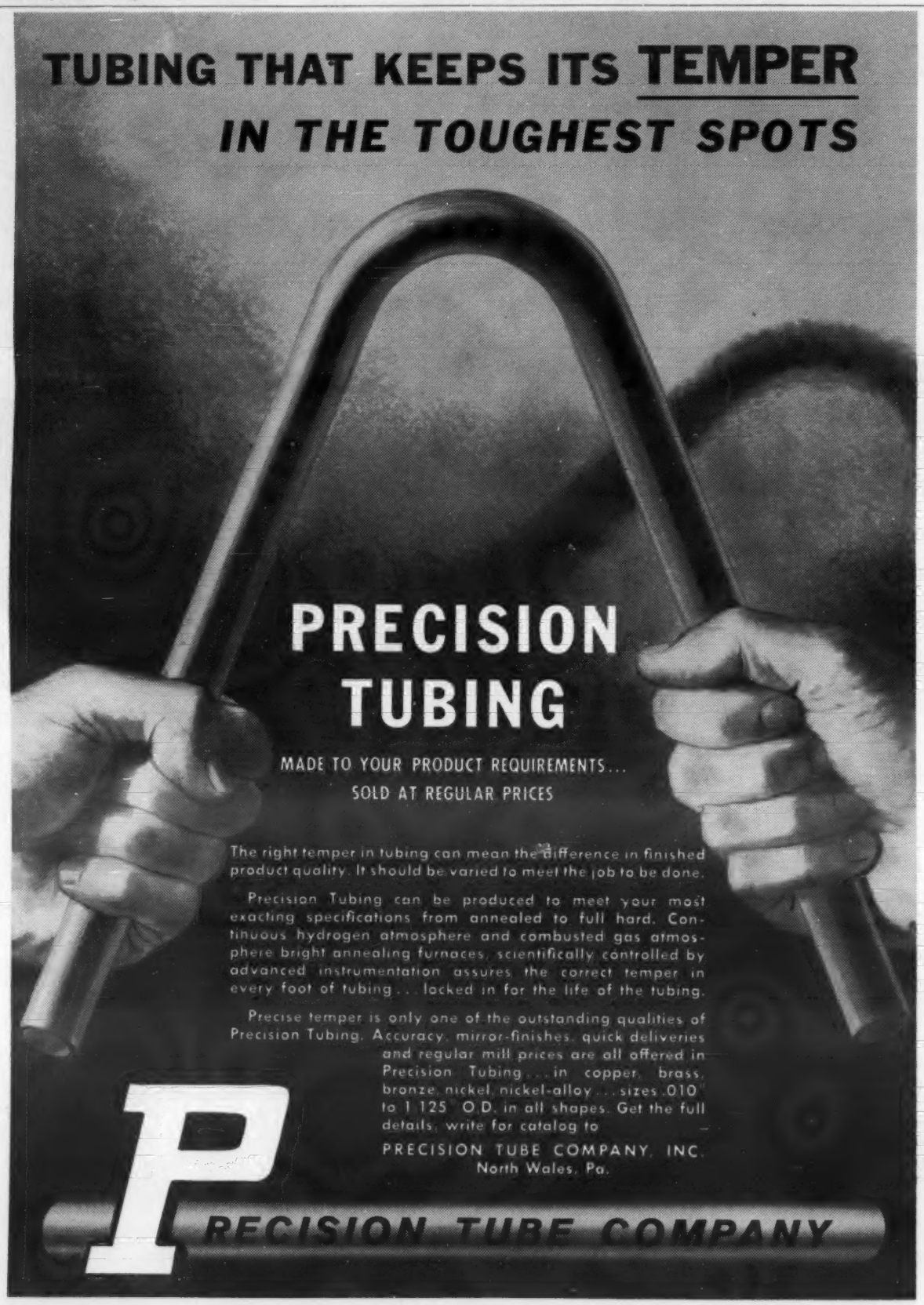
The latter taste much better in Hawaii incidentally, than anywhere else. Even freezing fails to capture the totally distinct flavor of picked-this-morning fresh pineapple.

Another indigenous Hawaiian attraction is the lei-maker, who sells flower necklaces streetside.

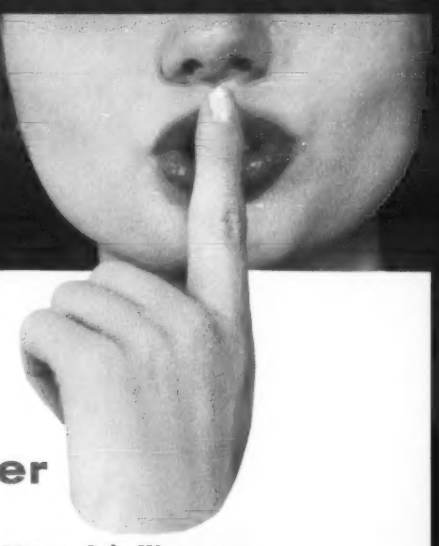
Casually these vendors string orchids, tuberoses, and other bright blossoms into exotic garlands. They thread 100 flowers in 15 minutes, tie the ends together, add a bright bow, and sell the resulting "leis" for a dollar apiece.

On the Mainland they'd cost, maybe, 12 dollars or more.

Most popular lei is the five-petaled plumeria, a perfumed blossom which makes Kalakaua Ave. (where these vendors hang out) possibly the sweetest-smelling street in the world.


TUBING THAT KEEPS ITS TEMPER
IN THE TOUGHEST SPOTS
PRECISION
TUBING
MADE TO YOUR PRODUCT REQUIREMENTS...
SOLD AT REGULAR PRICES
The right temper in tubing can mean the difference in finished product quality. It should be varied to meet the job to be done.
Precision Tubing can be produced to meet your most exacting specifications from annealed to full hard. Continuous hydrogen atmosphere and combusted gas atmosphere bright annealing furnaces, scientifically controlled by advanced instrumentation assures the correct temper in every foot of tubing... locked in for the life of the tubing.
Precise temper is only one of the outstanding qualities of Precision Tubing. Accuracy, mirror-finishes, quick deliveries and regular mill prices are all offered in Precision Tubing... in copper, brass, bronze, nickel, nickel-alloy... sizes .010" to 1.125" O.D. in all shapes. Get the full details, write for catalog to
PRECISION TUBE COMPANY, INC.
North Wales, Pa.
PRECISION TUBE COMPANY

Quiet...



WAGNER Polyphase Resilient Mounted Motors in ratings through 10 horsepower

Quiet, vibration-free performance is essential when motors are installed in areas where noise must be held to a minimum . . . in hospitals, churches, schools, office buildings, restaurants and similar locations where quiet is needed or wanted.

Such installations have created a need for larger polyphase motors that whisper while they work. Wagner has met this need by expanding its line of polyphase resilient mounted motors to include standard ratings through 10 hp.

You certainly have applications that call for a smooth running motor, cushioned by resilient mountings. To make sure they're quiet, specify Wagner Polyphase Resilient Mounted Motors. Only Wagner can provide an entire range of ratings through 10 hp.

Constant research and development have kept Wagner up front in electric motor design for more than 65 years . . . made the name Wagner one you can depend on in choosing electric motor drives.

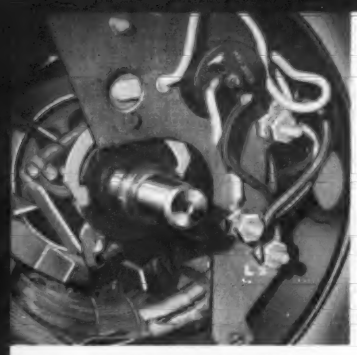
Your nearby Wagner Sales Engineer can help you select the right motor to meet your requirements. There are Wagner branch offices in 32 principal cities.

Wagner Electric Corporation
6400 PLYMOUTH AVENUE, ST. LOUIS 33, MISSOURI

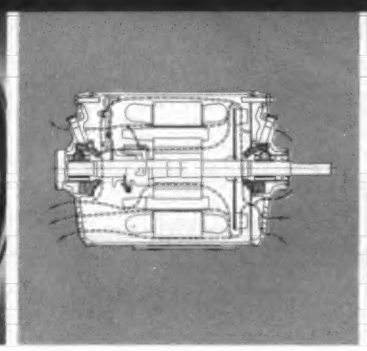
SLEEVE OR BALL BEARING.
These motors are furnished with quiet running steel-backed babbitt-lined sleeve bearings of high load carrying capacity. Ball bearings can be supplied when desired.

CEILING, SIDEWALL OR HORIZONTAL MOUNTING.
You can mount these motors on walls or ceilings by rotating the cradle base 90° or 180°. Motor stays dripproof.

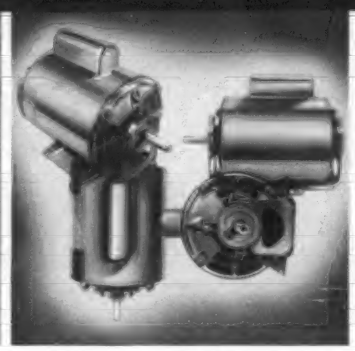
NEOPRENE CUSHIONING RING.
Annular mountings, of oil-resistant neoprene bonded to steel rings, cushion the motor in its cradle base to absorb the small amount of vibration that remains in the most carefully balanced motor.



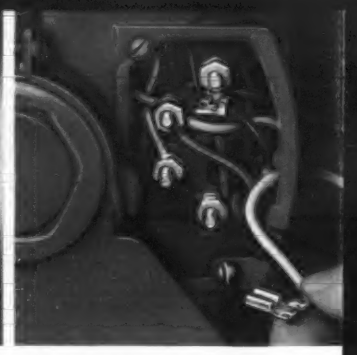
Quick Break Switch. The starting winding is disconnected from the line by this Wagner designed switch . . . test proved to make more than a million breaks. (That adds up to two starts per hour for 50 years!)



Efficient Cooling System. The improved ventilating system used in these motors directs a large volume of air through the motor to effectively reduce temperatures and add to motor life. Cross section indicates direction of air flow.



All-Angle Operation. The sleeve bearing design, in fractional hp ratings, has a positive lubrication system that permits operation in any position . . . can mean important savings in motor costs to manufacturers.



Quick Connect Terminals. Brass tabs on terminal studs permit quick, easy connection of leads . . . cut wiring time to speed assembly line production. Simply press the lead receptacle on to the stud—a positive connection is assured.

NO STARTING PROBLEMS with WAGNER CAPACITOR-START MOTORS

Pack more power into less space...give long troublefree service...are easy to hook up

Here are general purpose single-phase motors that have high starting torque and high pull-in torque. When used in the proper application and supplied with voltage close to their rating, they'll give positive starts every time. Troublefree operation is assured . . . thanks to the positive action of the Wagner governor mechanism and long life quick-break switch.

Wagner Type RK Motors pack more power into less space. Small enough to fit in tight spots, their ruggedness is built-in . . . permits direct mounting. And, sleeve bearing fhp models can be operated in any position. They are available in a range from 1/6 through 5 horsepower, with sleeve or ball bearings, and with rigid bases or resilient mountings.

Get these motors from leading motor distributors in your city, or from Wagner sales offices in 32 cities across the country. Your Wagner Sales Engineer will be glad to help you select the right motor for your application. Wagner Bulletin MU-217 gives full details on Capacitor-Start Motors.

Wagner Electric Corporation
6400 PLYMOUTH AVENUE, ST. LOUIS 33, MISSOURI

WM60-12

Urge Wood Sheathing As Insulation for Conditioned Homes

NEW ORLEANS — Use of wood sheathing to help insulate air conditioned homes is being promoted by the Southern Pine Association, an organization of manufacturers of southern pine lumber.

In a bulletin to builders, the association pointed out that "since its one inch thickness has the same insulation as 6 in. of masonry, wood sheathing is essential to maximum efficiency in air conditioning."

Sheathing is a layer of boards that ties together and covers the structural members.

The association also suggested that for joint holding strength and compactness, the framing lumber should be preshrunk by proper seasoning.

47,500 Room Units Being Used In Homes In Cincinnati Area

CINCINNATI — The Cincinnati Gas & Electric Co. estimates that there are about 47,500 room coolers in residential use in the metropolitan Cincinnati area, for about 13% saturation.

R. W. Brown, director of market research in the utility's electric sales department told the NEWS that 65,088 room air conditioners had been sold in the Cincinnati area during the six years ending in 1959.

Of this total, about 80% were sold for residential use and the other 20% for offices, stores, etc., he estimated.

Annual sales were broken down as follows:

1954	9,254
1955	14,481
1956	13,292
1957	8,265
1958	7,747
1959	12,049

Cooling Load Estimate Included In NEMA Room Unit Standard Booklet

NEW YORK CITY—A cooling load estimate form has been added to NEMA Standards Publication CN 1-1960, "Room Air Conditioners," it was announced by the National Electrical Manufacturers Association.

NEMA said the form is suitable for estimating the cooling load for comfort air conditioning installations which do not require specific conditions of inside temperature and humidity. CN 1-1960 also contains definitions, rating standards, and test procedures for room air conditioners.

The booklet is available at 30 cents per copy from NEMA, 155 E. 44th St., New York 17, N. Y.

REPRINTS SELLING FOR PROFIT.

By Frank Klein—Only $1.00 ea. Clip this ad and mail with your name and address to: Air Conditioning, Heating & Refrigeration News, 450 W. Fort St., Detroit 26, Mich.

Westinghouse Forms New Department For Total Electric Home Program

PITTSBURGH — Westinghouse Electric Corp. announced the expansion of its "Total Electric Home" program into a newly-formed organization to be designated the residential marketing department.

At the same time, Chris J. Witting, vice president, consumer products, said William H. Loeber, former Total Electric Home marketing manager, has been named manager, residential marketing department. He will report to Witting and will be headquartered at the company's offices in New York City.

"It has been apparent to us," Witting declared, "since we began the Total Electric Home program 18 months ago that builders are more interested today in buying as many services and products as possible from one supplier as a step toward reducing their costs and ultimate cost to the customer."

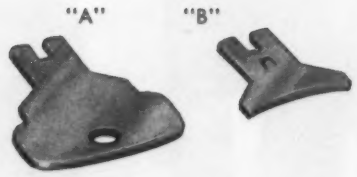
Included in the Westinghouse product line are heating and cooling equipment, wiring devices, meters, appliances, television and radio, lighting, and Micarta counter tops or wall paneling. In the case of apartment projects, electrical switchgear and elevator installations are available.

As "an indication of the trend towards electrical living," the Westinghouse executive pointed out that 18 months ago there was only a handful of utilities interested in promoting electric living.

"Today we have active programs under way with 85 of the nation's leading utilities and with some 160 tract builders from coast-to-coast," he said.

Loeber said the field managers previously assigned to the Total Electric Home project now will assume duties of regional managers, residential marketing, in the new department. They are:

Northeastern and Mid-Atlantic regions—Francis X Winn, who headquarters in New York City; southeastern region—John G. Adams, Atlanta; central region—Herman L. Wiler, Mansfield, Ohio; northwestern region—James K. Garvey, Chicago; southwestern region—Charles R. Beatty, St. Louis; Pacific Coast region—J. G. McKinley, San Francisco.



How settings are locked

Where it is desirable to lock settings, installer removes cover and pushes out factory-installed key "B" from each adjusting knob. This disconnects knob from adjusting shaft. Then, user may insert special key "A" (supplied for key chain use) through knob slot and turn to make desired settings . . . remove key and thermostat is locked as adjusted.

Take your choice...heating, cooling or heating-cooling...each features unique, easy-to-use, locking-type knobs

Here's the line voltage thermostat that has "everything" desired for accurately controlling temperature in motels, schools, offices and similar installations.

It has easy-to-read temperature and function selector dials. It has an accurate bimetallic thermometer with vertical dial. It has exclusive, locking type adjusting knobs, attached to cover but connected to adjusting shafts by factory-installed "keys" within the knobs. It has a unique, built-in but concealed adjustable high limit stop for temperature dial. It has an unusually sensitive element and mechanism which provide low operating differential at all voltages and all amperages within its rating. It has easiest "field wiring" ever...simply connect to large terminals *on back of thermostat.* And, it has modern "thin-line", compact styling. Learn more about this new thermostat...write to the Penn factory for Bulletin 3233.

PENN CONTROLS, INC. Goshen, Indiana

EXPORT DIVISION: 27 E. 38th ST., NEW YORK, N.Y.

AUTOMATIC CONTROLS FOR HEATING, REFRIGERATION, AIR CONDITIONING, APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

Carrier gives you what it takes to...

Corner the Market

NEW! "CORNER THE MARKET" CAMPAIGN!

Outstanding travel and merchandise awards for you and your salesmen . . . Hawaii . . . Jamaica . . . Regional parties . . . Mercedes-Benz Sedan . . . Ampex Stereo. Scores of luxurious prizes.
All wrapped up in the most comprehensive incentive program ever offered to air conditioning dealers.

NEW! INDUSTRY'S MOST LIBERAL FINANCING!

Free floor plan. Stock now, pay as you sell! No down payment. No off-season interest or carrying charges. You get complete flexibility in financing to fit your needs and your local market.

NEW! ADVERTISING THROUGH THE WINTER!

First big off-season promotion featuring Carrier's exclusive "12-Month Home Air Conditioning."

PLUS THE OTHER KEY MONEY-MAKING FEATURES OF A CARRIER FRANCHISE:

- The famous Carrier brand—built by the acknowledged leader and founder of the industry.
- Broadest selection of equipment for every market and every air conditioning need—yours with Carrier.
- Complete emphasis on air conditioning—no dilution because of other interests.
- Solid support from the best established, most experienced distributor organization in the business. Carrier distributors, on the average, have sold the Carrier line for over 15 years.
- Strong national advertising backed by 25 years of continuous advertising effort. Every ad directs prospects to Carrier dealer listings in the Yellow Pages.
- Revolutionary advances pioneered by Carrier—including the new and sensational Carrier Automatic Air Purifier.
- Financing handled by a Carrier affiliate. Your customers get liberal terms and you gain their confidence.
- Sales training that is continuous and complete. Offers vital aid to you and your salesmen.
- On-the-spot help and training in the most modern techniques in engineering, service and business management.
- Carrier Planned Service—a high-margin profit maker and volume builder in off seasons. You can keep your service and installation crews intact and fully staffed year round.

The sooner you get started on Carrier's "CORNER THE MARKET" Campaign, the greater your "share value" and the bigger your prizes.
Get in touch with your Carrier distributor right away!

Carrier Air Conditioning Company
A DIVISION OF CARRIER CORPORATION · SYRACUSE 1, N.Y.

How It's Done In Hawaii

Servicemen Average 12 Calls per Day Against Six on Mainland; Despite Ideal Climate Residential Air Conditioning Is Growing

By George F. Taubeneck

HONOLULU, Hawaii—Six is the average number of calls per day made by servicemen in the 48 mainland states. In Hawaii, our 50th state, it's 12.

Authority for this statement is W. E. Bougher, Service Warehouse Manager for Ramsay division of American Factors.

Ramsay, biggest distributor in the Islands, wholesales all G-E products, plus Worthington "applied" air conditioning. Also it operates four retail stores, and takes care of all service.

Motto: "Good service is our good name."

As do other Hawaiian distributors and contractors, Mr. Bougher claims that Hawaiian servicemen work harder and more conscientiously than their counterparts anywhere in the world.

Skillful scheduling is apparent, too.

Jim "Red" Stacy (a member of the 1935 Detroit Lions world championship football team—who was mentioned in "Inside Dope" a few weeks ago) showed us how this up-to-the-minute service department works, on a conducted tour of the Ramsay facilities.

All service trucks are equipped with two-way radio. A central dispatching office takes incoming calls and routes them to the field men—one at a time.

(Thus they aren't mentally overburdened by thoughts of how much more work is ahead of them.)

Chief of this central dispatching office is Tommy Ching, who was a topnotch serviceman himself for many years.

Tommy not only dispatches, he advises. Any time one of his men runs into a problem, he simply calls Tommy—and gets an expert answer.

Another time-saver is the "job price" system (standard price for each type of repair job). Before that system was installed, field men spent up to half an hour estimating job costs on each assignment.

On Oahu, where Honolulu is situated, every Ramsay service call is completed within 24 hours—and most within eight hours.

23 Servicemen Do Work of 30 to 35

"I have 23 refrigeration and air conditioning servicemen now," reports Mr. Bougher. "On the mainland I'd need 30 to 35 for the same amount of work."

Cliff Stroh, Jerry Greenwell, and Allen Smith are the men who keep Mr. Bougher and "Red" Stacy busy. They direct sales of Ramsay's air conditioning business.

Van Darrow and Joe Tanaka of Air Engineering Co. (yes, they subscribe to AIR ENGINEERING) confirm Mr. Bougher's high estimate of Hawaiian service and installation men.

Their contractor-dealer firm, organized early this year, installs Typhoon, American Standard, McGraw-Edison, and Trion equipment.

Both Mr. Darrow and Mr. Tanaka, along with 17 of their associates, learned the business while working for the Air Conditioning Co. of Hawaii (Carrier representative).

Their service and installation men (mostly trained on the job) are "commendably diligent," they chorus.

Air Engineering Co. has its own sheet metal shop, and does considerable ventilation work, which helps create customers for eventual air conditioning.

But these fellows specialize in package-type air conditioners, all sizes.

"Every package installation is a rush job here," grins Joe. "Tomorrow is too late."

As elsewhere, "applied" big system air conditioning for hotels and offices is a cutthroat business here.

Heide and Cook (York), Air Conditioning Co. of Hawaii (Carrier), and Oahu Air Conditioning (Trane) all are doing a substantial volume of business but . . . "don't mention my name when I tell you this" . . . confide that other so-and-so's prevent anybody from making a decent profit.

'Master of Labor Relations'

Key man in the Hawaiian air conditioning picture is Walter T. Oda, who is executive secretary of both the Plumbing & Mechanical Contractors Association and the Electrical Contractors Association in Hawaii.

All hands agree that Mr. Oda is a master of labor relations. Under his expert guidance, there haven't been even any *minor* union problems.

He has a sure touch with municipal codes, too.

Believe it or not, residential air conditioning is making some progress in this naturally air conditioned "paradise," where temperatures above or below the 70-80° range are extraordinary.

All homes are built open-style to take advantage of the zephyrous trade winds. And they're situated on higher ground than stores, offices, hotels, etc.

Residential Campaign Started 2 Years Ago

Even so, the local public utility (Hawaiian Electric Co.) decided that package units could be sold to homes. Sales pitch: screen out noise, dirt, and insects.

Some two years ago this writer was the speaker at a "kickoff" luncheon sponsored by Hawaiian Electric to launch its residential air conditioning campaign. More than 200 dealers came to hear "the word."

Results have been gratifying. According to Francis Williams and Ted Souza of Hawaiian Electric, several hundred Hawaiian homeowners were surprised into purchasing window, through-the-wall, and attic units that first year of the campaign.

This year, sales to homeowners are running 68% ahead of 1959.

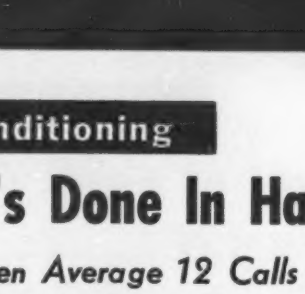
Hawaiian Electric contributes $15 toward installation of every residential installation, and that helps a lot.

Replace with confidence . . . Use

Redmond

MICROMOTORS · BLOWERS · FAN BLADES
REPLACEMENT KITS · ACCESSORIES

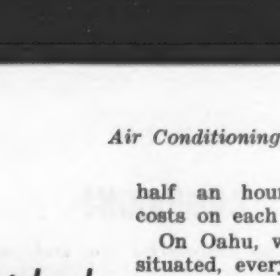
TYPE T



The finest motor of its size for fans, churns, pumps, and commercial applications requiring closed construction.

When you replace a motor or a blower you stake your reputation on the product you use. Replace with Redmond MicroMotors and other Redmond products and you can be confident that your customers will get years of trouble-free service and whisper-quiet operation. Redmond, known nationally as "The Big Name in Small Motors," designs, develops, and manufactures the fractional horsepower electric motors preferred by leading manufacturers.

TYPE AM

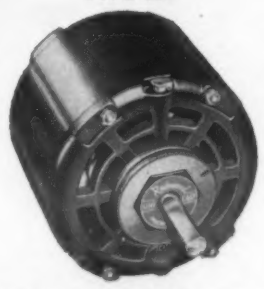


Your No. 1 condenser fan motor for replacement in the air conditioning and refrigeration fields.

REPLACEMENT KITS

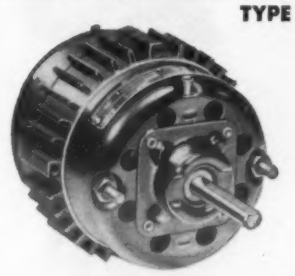
For "all in one" replacements of refrigeration condenser fans.

TYPE AY



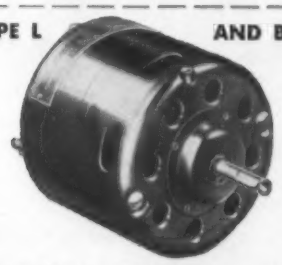
For heating applications requiring direct drive blowers.

TYPE TL

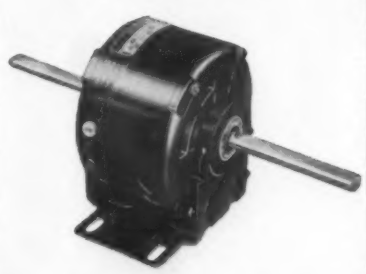


Dependable power for both fan and mechanical duty.

TYPE L AND BL

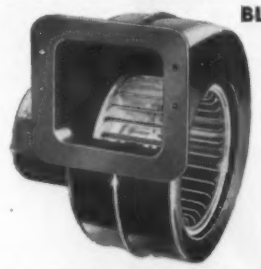


Accepted by the industry as standard for low-powered applications, such as fans, small appliances, and aquarium pumps.



For unit air conditioning replacement.

BLOWERS



Available through 325 C. F. M. Housing designs suitable for difficult applications.

Redmond DISTRIBUTORS DIVISION REDMOND COMPANY, INC., OWOSSO, MICHIGAN

New Orleans Wholesalers Ask 'Correct Interpretation' Of Their Policy on Sales to Industrial Establishments

Air Conditioning &
Refrigeration Wholesalers
Cleveland, Ohio

Editor:

You have reported a great deal on the situation in New Orleans regarding the picketing of a wholesale operation by various contractor groups in the refrigeration and air conditioning trade.

As you recall, the original release you received from New Orleans was checked out by you, and found to contain a number of incorrect statements. You corrected these errors of reporting, but unfortunately at least one other publication reported the story as received.

We want you to know that ARW has no objection to your reporting of this story for it is news. But as an association representing wholesalers throughout the country, we take exception to certain statements made by representatives of the New Orleans contractor group that by implication, incriminate all wholesalers in that area.

We have received a signed statement from seven of the leading air conditioning and refrigeration wholesalers in the New Orleans area. ARW represents six of the seven wholesalers. This office has authorization from these wholesalers to release to you this statement for your consideration:

Text of ARW Statement

"In the Sept. 5 issue of the NEWS, on page 1, was an article headed 'New Orleans Wholesaler Price to Plant Misinterpreted, Sales Policy Set—New Orleans.' The story contained a statement reportedly made by Philip J. Thompson representing the contractor groups that —'sales made directly to Industrial Plants which do not have qualified personnel to maintain their equipment, and I want to emphasize that we have knowledge that this was being done by all supply wholesalers in the area.'"

The wholesalers represented by ARW in the New Orleans area take exception to this statement. Mr. Thompson implies a promiscuous violation of a wholesaling policy in the New Orleans Trading Area as well as flagrant violations of the orderly distribution of refrigeration products to the ultimate consumer. Such a statement cannot be substantiated by a check of the wholesalers' records and the wholesalers fail to see how an individual working in the trade can substantiate this implication.

It is just as impractical for these wholesalers to sell at wholesale to Industrial Institutions who could not maintain their equipment, as it is for the manufacturer to sell direct to the consumer, by-passing both the wholesaler and the trade.

Since these wholesalers have been so meticulous in their dealings and as a group believe in the orderly flow of material from manufacturer - wholesaler - to the trade - to the consumer, be maintained, they wish to go on record in reporting to all elements of the industry that the conditions outlined in the article in your Sept. 5 issue are not as deplorable as indicated.

While these seven wholesalers are of various size and age, they have established themselves in this market area because of sound policy and orderly distribution through the trade.

This statement was signed by, Budlock Refrigeration Supplies, Acme Refrigeration Supplies, Enochs Sales Co., Flick Supply Co., Mechanical Supply Co., Nola Sales Co., and Standard Brass & Mfg. Co.

In addition, we have received a letter from Ray Dingler, president of Solar Supply, Lake Charles, La. notifying us that its New Orleans operation was closed on Aug. 30. This decision was made long before the picket line situation.

Mr. Dingler stated to me, "I believe you could assist us and the industry if you could pass on the true facts to the trade publications that have been misquoting the situation."

Mr. Dingler then stated, "We are picked as the goat and called to deliver a drum of gas to X Banana Co. We had sold to the company before and at that time had checked to see if they had their own maintenance man. We also were aware that this company had been sold previously by other concerns on the same basis. When we attempted to deliver the gas we found that no one had knowledge of the order at the company and they would not accept delivery. The next day a picket line was set up in front of our store."

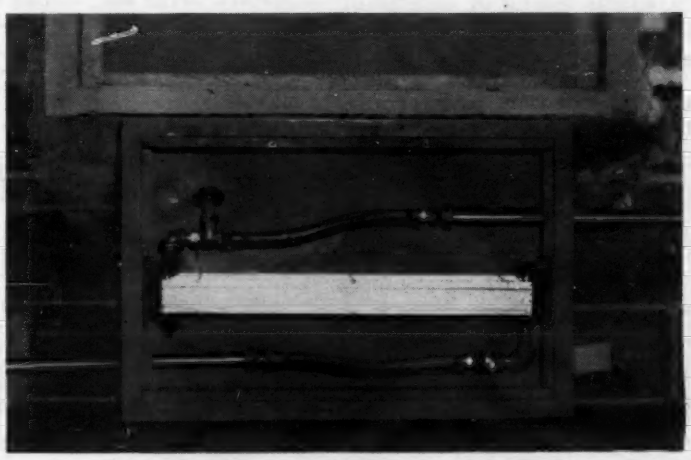
We do not wish to get into a cat and dog fight in reporting this to you, for obviously this type of condition leaves scars. But the record of ARW members in their dealings with the trade is such, that we do not want the industry at this time or at any time, to get the mistaken impression that we are attempting to by-pass the normal channels of distribution. Our success individually and collectively has come about because we have adhered to the principle of serving our customers in their best interest. We shall remain true to this principle.

THOM MUIR,
Executive Director

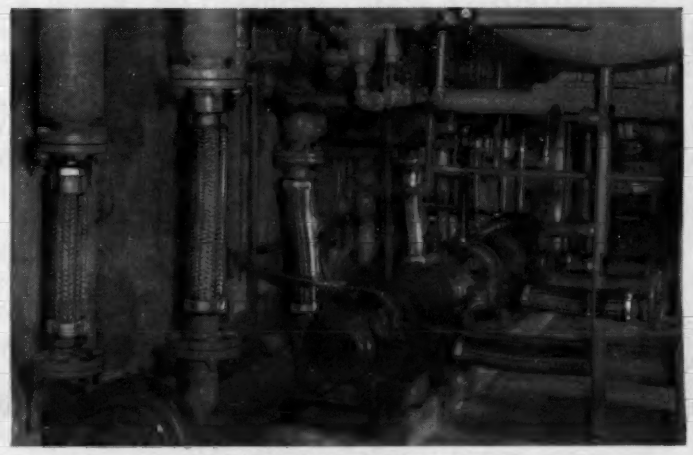
NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

APPLICATION HINTS:

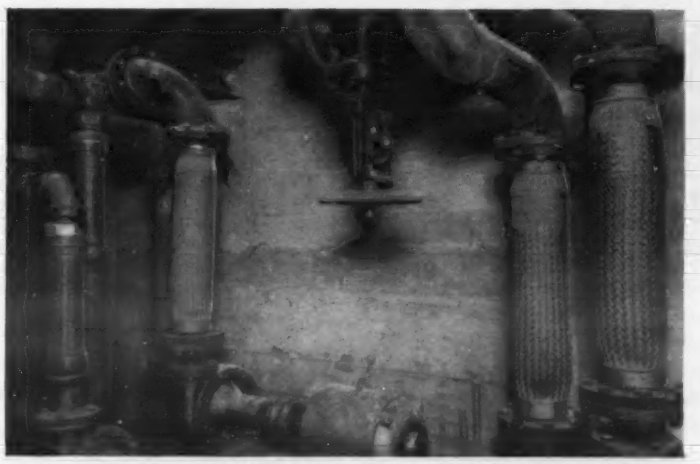
Ways to simplify construction and cut costs with Flexpipe



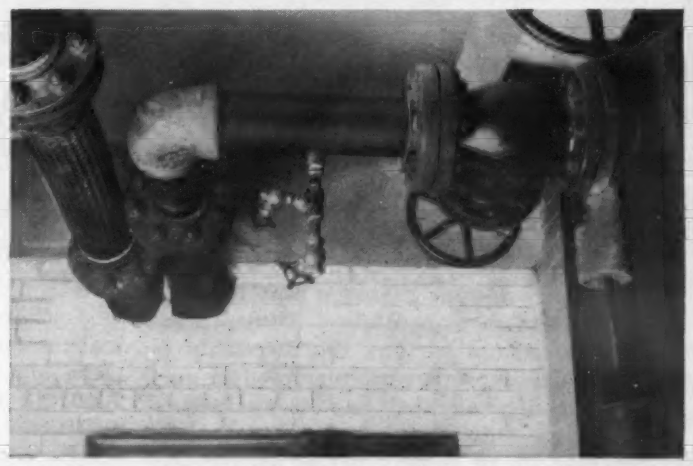
Cut total piping costs of heating systems. Flexpipe connectors handle offset and riser expansion—eliminate the need for extreme accuracy in roughing-in—eliminate time and cost of through-floor connections, hung ceilings and furred out walls. Piping can hug the wall, saving floor space. Flexpipes are used to simplify design and installation in both steam and hot water heating systems.



Save space, absorb vibration, cut installation time in air conditioning systems. In larger heating and cooling systems, Flexpipes take up movement caused by expansion and contraction in piping—absorb vibration from pumps—require less space—install easily in tight quarters—even when outlets do not line up—cut costs of using short lengths of pipe and elbows.



Handle expansion on long horizontal runs in big hot water jobs. Modern schools and institutions of multi-structure design involve long horizontal runs for hot water heating mains. Using Flexpipes to take up expansion and contraction in the mains can often eliminate the need for expansion bends—make possible smaller, more economical tunnels—simplify and speed installation—reduce maintenance. Flexpipes also dampen pump vibration and minimize transmission of noise along the heating mains.



Meet big, tough piping problems. Flexpipes have the flexibility and strength to handle many unusual and complex jobs. These are available in sizes through 16" I.D. in tin bronze, stainless steel or hot-dipped galvanized steel. In the installation above, Flexpipes helped solve some difficult problems in air conditioning a large office building. Flexpipes connect risers and branch pipes, handle movement up to 2 inches in the spring-mounted risers, and water pressures up to 400 psi at lower floors.

WHERE TO BUY: Leading plumbing and heating supply houses can provide you with information about Flexpipe in standard sizes. For the name and address of the distributor serving your area, or for more detailed information, write to: Anaconda Metal Hose, P.O. Box 791, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ontario. 60158 L

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They'll Do It Every Time

by Jimmy Hatlo

AFTER A TWO-DAY TUNE-UP IN THE SHOP, THE TV SET IS BROUGHT BACK HOME···
OH, TELEVISION, HUH? THAT GOES IN THE FLAT UPSTAIRS···
WYER & TOOBS TELEVISION REPAIRS
IS THE LADY READY FOR YOU? CAN YOU SET IT DOWN AND SCRAM? NEVER? NO, NEVER!
OH, HA-HA! WE WERE HOPING YOU'D BRING IT SOON··JUST HOLD IT A MINUTE UNTIL I DUST OFF THE FLOOR! OH, GLUPEENA, RUN OUT AND GET ME A CAN OF FLOOR WAX, WILL YOU, DEAR?
THANK AND A TIP OF THE HAT!@ HAT TO E.D.EMERICK, 1416 SUMMIT AVE. FORT WORTH, TEX.
JIMMY HATLO
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Getting Down to Short Strokes On Product Comparisons

AUTOMOTIVE industry, perennially the progenitor of no-holds-barred competition, has made a big thing of direct product comparisons. Tools for dramatizing features and performance have been utilized by auto dealers, salesmen, and prospects with telling effect.

In other lines of business this sales angle has been utilized, too—especially in the arena of those "big-ticket" hard goods which are marketed through relatively "exclusive" dealers (that is, those which do not push competing lines).

Newsstand success of the first "Consumers' Union" type magazines some 25 years ago proved that information of this sort eagerly is sought by purchasers.

Two such publications currently enjoy substantial circulation even today. And many "general" magazines frequently publish comparative analyses of products their readers might buy.

Why, then, when consumer interest in product comparisons is so keen that hundreds of thousands of families are willing to pay up to $12 a year for *dubious* "testing" reports, have members of our industry refrained from publishing *valid* studies of this sort?

Good question.

Commercialized "consumer report" analyses leave much to be desired. Often (probably innocently enough) the best features of a manufacturer's particular product may be ignored or slighted, and its weaknesses magnified—with the reverse being true in the case of an equally baffled competitor.

"Who? Me?" each may wonder after reading these so-called "impartial" dissections.

Whereupon a damaged manufacturer might well ask: "If someone is going to establish a yardstick of 'comparative value' for my product, shouldn't I be doing it *myself?*"

There are two basic approaches to a competitive-comparison job. Both have genuine value. Choice of either depends upon circumstances and convenience.

Manufacturer of a product which enjoys apparent clear-cut advantages may content himself with a simple listing of significant specifications and features compared with those of competitive items.

In doing so he may resort to the transparent device of listing his competitors by initials instead of by brand name. For consumer advertising this may be sound practice.

However, rare is the manufacturer who can prove more than two or three elements of superiority. Thus, the "initial chart" may lack overpowering conviction.

Second approach may be even better. *Via* this technique "Product A" enjoys *some* advantages when compared by the same yardstick with *others* in its field (but not in all or, perhaps, not even in most).

This situation calls for cagey interpretation, couched in terms of consumer benefits, which soft-pedals standardization and emphasizes the DIFFERENCES.

Contrasts of this type rely upon emotionalized "plus" benefits which do not appear in raw specifications. They delve into many areas where comparisons cannot be checked or resolved by a simple "yes" or "no."

This sort of thing requires creative skill and, consequently, is more expensive to produce.

Self-preservation goal of a confident manufacturer should be this: He can *distribute widely and persuasively those TRUTHS which are to his advantage to publicize.* (Half-truths will backfire.)

Biggest single influence against employment of this technique in our industry is a vague belief that it "just isn't cricket."

Amongst our wonderful people there exists an unspoken "gentlemen's agreement" against calling a spade a spade, or of making the most of those competitive advantages which really exist.

We submit that, in the heating-cooling business, quite a few charlatans are present and unaccountable. Perhaps it's time that reputable manufacturers got down to the short strokes of actual comparisons.

Better business, and more salubrious consumer satisfaction, might ensue.

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AIR CONDITIONING HEATING & REFRIGERATION NEWS

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F. M. COCKRELL, *Founder*

'The Conscience of the Industry'

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From the Files of the News

25 years ago . . .

The Air Conditioning Manufacturers Association has formally adopted standards for the rating and testing of air conditioning equipment—they emphasize to the public (1) what true air conditioning is, (2) what an air conditioning system should do, and (3) approximately what air conditioning should cost on the basis of results to be obtained. . . . "Air conditioning—a depression baby—has taken the popular fancy more than any other single development within the past 10 years," John Howatt, national president of ASHVE, told members of that engineering society, emphasizing the "sell for satisfaction" motive, rather than sell for profit only.

Standard methods for testing mechanical condensing units were adopted by the Refrigerating Machinery Association. With the adoption of these standards, RMA members believe, a purchaser of refrigerating equipment will be able to determine exactly how much refrigeration he is getting for his money. . . . Practical problems of the refrigeration and air conditioning service business, ranging from the installation of truck refrigeration systems to the establishment of uniform accounting and bookkeeping methods, will be studied by members of the RSES during its second annual convention in Detroit.

Automatic Products Co., Milwaukee, manufacturer of refrigeration and automatic control equipment, has added 5,000 sq ft of floor space to its manufacturing plant, reports R. W. Johnson, president. . . . Better results in plate making and offset work and more efficient handling of inks and printers' rollers has been made possible through accurate control of humidity by means of a York system installed in the Letterlines Lithographic Mfg. Co. plant located in Philadelphia.

The "Clarkair" air conditioned bed, which is cooled by the gravity process and which operates without a canopy, is being produced by Clark Equipment Co. . . . A service policy adopted by several large manufacturers decrees that all controls such as pressure controls, thermostatic controls, thermostatic expansion valves, constant pressure valves, etc., are to be sealed by the installation man.

10 years ago . . .

Dr. Willis H. Carrier, founder of Carrier Corp. and known as the "father" of the air conditioning industry, died of a heart attack. . . . Manpower committee of the National Association of Food Chains, in talks with government officials responsible for classifying manpower, classified refrigeration specialists as expert technicians absolutely essential to the successful operation of modern food stores.

A proposed new standard for air conditioning, household and commercial refrigeration is being submitted to industry by Underwriters' Laboratories, Inc. to bring its requirements in line with the new ASA B9 safety code. . . . For room coolers UL proposed the condition of test at 60% r.h. and 104°F across the evaporator and condenser. . . . One of the safest places to be in event of an atomic explosion is in a frozen-food locker, stated leaders of that industry at a New York State Locker Assn. meeting.

A Denver air conditioning dealer stimulated interest in package units for home and office by "refrigerating an entire window," accomplished by enclosing an 8 by 5-ft display window to the right of the entrance, with airtight paneling. . . . A recent survey shows that 86.3% of all farms in the country now have central electric service, paving the way for air conditioning and major appliance business in those rural areas. . . . A Florida circuit court ruled that the State Improvement Commission was within its rights in refusing the lowest bid on air conditioning the Florida Supreme Court Building.

'HARD BASE' MISSILE ARTICLE EXCELLENT

The Trane Co.
La Crosse, Wis.

Editor:

We think your article *Conditioning a 'Hard Base,'* which appeared in the Sept. 19, 1960, issue of AIR CONDITIONING, HEATING & REFRIGERATION NEWS, was excellent; and we would like to have your permission to reprint parts of it.

GRETA LOCKHART,
Publicity-Research Section

CONTINENTAL TO BE AT DAIRY EXPOSITION

Continental Equipment Corp.
Milwaukee, Wis.

Editor:

We are ardent fans of the "News" and enjoy the many fine and timely articles found in each week's issue. We were, however, a bit put out that we weren't mentioned in your Sept. 26 issue as the 62nd refrigeration firm to exhibit at the Dairy Industries Exposition.

We manufacture, in addition to our line of soaked bottle washers, a complete line of ice builders, using air for agitation.

These ice builders are manufactured in both direct expansion and full-flooded models and with ice storage capacities ranging from 1,500 lbs to 80,000 lbs in a transportable unit.

Although we will not be exhibiting one of these ice builders, we will be holding forth in booth #C-354 and we would like to invite any one interested to come in and discuss them.

FRED DUNCKEL

CAN'T WIN 'EM ALL

Pol-Air Refrigeration Co.
507 E. 6th St.
New York 9, N. Y.

Editor:

With absolutely NO enthusiasm, kindly renew my subscription (two years) to your ultra - reactionary, "dodo - bird psychology" publication.

However, as a TRADE MAGAZINE, you're the tops.

CY SCHLEF

(we think, signature kind of illegible)

Answer: Thank you kindly, sir, for the long-term renewal of your NEWS subscription.

DIFFERENCES IN AIR PURIFIERS EMPHASIZED

Electro-Air Cleaner Co.
McKees Rocks, Pa.

Editor:

I think it is a fine thing that you acted immediately in publishing the clarifying news story on air purifiers.

Widespread interest seems to be centered on air cleaning and air purification at the present time. Manufacturers are now offering equipment that falls under the category of air cleaners or air purifiers that vary so widely the design has no similarity whatever. For instance, one company sells a unit for $39.50 while an Electro-Air residential unit, installed in a central system, would cost the customer about $350. The company making the $39.50 unit makes virtually the same beneficial claims that we do.

It is a real problem for us to separate the various types of equipment and prove to the customer that there is only one type of equipment that will really perform, a true electronic air cleaner.

We seem to be getting our point across because the sale of our residential units is increasing just about as fast as we can finance the business. Our growth in sales volume has been at the rate of about 40% annually and 1960 will probably run ahead of this figure.

P. W. AITKENHEAD,
President

DECRIES PRACTICES OF ICE CREAM FIRMS

Rice Refrigeration
Newark, Dela.

Editor:

In the refrigeration sales field, we run into some pretty stiff competition. This we accept as part of the business.

However, we protest strongly against ice cream companies buying refrigeration equipment other than ice cream cabinets and selling the equipment to the stores at cost just to get them to handle their product. After all, we do sell refrigeration equipment and not *ice cream.*

We feel the manufacturers should not sell the ice cream companies any refrigeration equipment other than that used for ice cream.

LEE B. RICE

HONG KONG FIRM REPORTS BUSINESS UP 110%

H. W. Turning & Co., Ltd.
Hong Kong, China

Editor:

We very much appreciate the article about our company appearing in the "World Trade" issue of your publication.

It will interest you to know that by Aug. 31, 1960, sales were 110% over those of 1959 instead of the modest 35% increase as reported to you earlier. Furthermore, we are presently negotiating with several U. S. manufacturers to launch the company full-scale into the central air conditioning systems field. Our engineers will soon proceed to the United States where they will receive full training.

A great share of the credit on the unprecedented expansion of our firm should go to Messrs. Giordano and Grosshans, president and export manager of Fedders Corp. for their foresight and whole-hearted cooperation to make this achievement possible. The feat is all the more extraordinary, when one realizes that over 90% of American manufacturers of air conditioning equipment are actively represented in this market and that our penetration of the market is approximately 30%. Furthermore, a bare three years ago, the Fedders brand-name was hardly known in the territory.

K. S. WU,
Director

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

Our Copper Tube is a V.I.P.

Delivering Viking Copper Tube in a Rolls Royce is not unusual at all when you consider the facts. The attention, care and protection we give it throughout its fabrication makes it a V. I. P. (Very Important Product) in our opinion. If it receives the best in protection . . . why not in its distribution to our customers?

VIKING copper tube co.
CLEVELAND 10, OHIO

The 1937 Phantom III, 12-cylinder Rolls Royce is a Classic. Formerly belonging to the Lord Mayor of Kingston-on-Hull, it is now in our service. Viking personnel, however, drive American made cars.

The Case for Ducted Electric Heating

Norris of Lennox Describes Benefits, Proper Characteristics Of Such Systems In Discussion With Dayton ASHRAE

By Phil B. Redeker

DAYTON — "I'm convinced that the central unit type of electric heating system, with forced air circulation through a ducted system, will eventually be the volume seller in residential electric heating applications," John W. Norris, president, Lennox Industries, Inc., told the opening Fall meeting of the Dayton chapter, American Society of Heating, Refrigerating & Air Conditioning Engineers.

A turn-out that filled the meeting room at the Engineers' Club to overflowing and a question-and-answer period that veteran members said evoked more interest than any within their memory, attested to the interest in the subject and to the viewpoints expressed by the speaker.

A principal reason for the conviction that the ducted system with the central electric heating unit located with the blower will become the volume seller for homes is that it will be the least expensive method of providing *complete* home heating for the builder and the heating dealer, the speaker declared.

"Ultimately it will cost the builder less because it costs less to install it and to wire it, and temperature control can be through a single thermostat," Norris stated. "There will be no need for a flue or combustion air openings. It will be the optimum type of system in terms of simplicity and maintenance."

However, the factor that Norris believes will make the central ducted electric heating system the most popular type will be the fact that it is the one type of electric heating that lends itself to proper year-round air conditioning of the home.

"I spoke about the eventual low-cost factor," Norris commented, "but my personal hope is that the price of such systems will stay up until the heating industry learns how to sell the important values that are made possible with year-round and complete home air conditioning."

Only Central System Can 'Condition' Air

The home that is properly insulated, weather-stripped and oriented for electric heating, said Norris, makes it virtually impossible to provide properly conditioned air for the home if a central air conditioning system is not used, he pointed out.

Such homes develop a stifling, stagnant "feel" inside with cooking and smoking odors difficult to eliminate, with no humidity control possible, and condensation becoming a problem under certain atmospheric or interior home conditions.

"In the hot weather months the tightly insulated, weather-stripped home must be opened up as much as possible, and this means that there is not only a lack of temperature and humidity control, but that the problem of keeping the home and its furnishings clean become more acute," declared the Lennox president.

Builders Finding Value In Air Conditioning

"In the past two years builders in many parts of the country have found themselves faced with a demand for customers for year-round air conditioning of homes so designed that they can be equipped with year-round systems at a later date. What the builder is finding out is that year-round air conditioning is the 'plus' value that will move his particular home in the new housing market."

The central-type heating unit located at the blower section of the system is not the only type of electric heating available for central systems, Norris pointed out. Lennox has available, in addition to forced air electric furnace, plug-in type electric heating units in three capacity ranges for installation at air distribution outlets, and also universal duct heaters which can be used in zoned systems and which can be installed in any position.

The lively question-and-answer period following the speaker's formal talk covered a wide range of subjects. One question which seemed to spark considerable reaction from the audience was "how important is the interest in and promotion by the local electric utility company to the sale of both electric resistance type heating and heat pumps."

"I would have to say that utility support is a key factor to a rapid growth in sales of both electric resistance type heating and heat pump air conditioning for homes," Norris replied. "However, for the present we cannot count upon the support of all electric utilities for such systems.

Why Electric Utilities Are Factor In Market

"There is profit to the electric utilities in electric heating. Therefore, these utilities are going to do a tremendous merchandising job and have the money to do it. In areas where the utility still has a winter peak in their total load, they will probably not be particularly interested in the heat pump. They will prefer straight electric resistance heating.

"It takes just as much additional power plant and distribution capacity for a heat pump installation as it takes for straight electric resistance heating. The heat pump will only consume 35% to 50% as much kwh per season. Utilities in these areas, therefore, will probably push straight electric resistance heating because they make a bigger sale in ratio to their fixed investment."

Norris was asked why he advocated a continuous air circulation (C.A.C.) system operating from a belt-driven blower for a ducted electric heating system.

"We advocate continuous air circulation first, because we feel it will provide the homeowner with the best possible conditions and second, we believe that over-all it will result in a lower cost of operation," said Norris in reply.

Use Belt-Driven Blower For Electric Heating

"Our reasons for recommending the belt-driven blower for electric heating are that electric heating systems usually impose low resistance and you will get quieter operation for low resistance systems with a belt-driven blower. You can also adjust the belt-driven blower to deliver the proper air volume, under varying system static conditions, better than you can adjust a direct-drive blower.

"In these electric systems, blower speeds below 600 rpm will do the heating job very quietly. Speeds below 600 rpm for direct-drive blowers cannot be tolerated because the bearings in all direct-drive blower motors lose their lubrication below 600 rpm."

In a ducted system where the furnace is in the basement, should the floor be insulated?

Answer to this is "no" according to Norris, particularly if the basement is used for any purpose whatever. You always need some heat in the basement to keep the plumbing from freezing and most basements are used for full living purposes and, therefore, must be heated. Any heat loss from an electric furnace or warm air piping in a basement, becomes usuable heat in the basement space. It is not lost.

One member of the audience, making the assumption that electric heating would be brought on "in steps," asked if this would not make the installation more expensive in terms of complicated controls and additional wiring.

"Modulating type controls are not needed in central electric furnace systems," Norris replied. "Power control can be accomplished through a very sensitive highly heat accelerated low voltage room thermostat. In small homes, one thermostat is usually sufficient for good control throughout the entire house.

"With the single thermostat, the resistance elements are brought on in steps of from 4 to 6 kw — depending upon the manufacturer — with some time lag between each step.

Single Thermostat Can Provide Proper Control

"More complicated controls can be used on electric heating, but it is my opinion that the simple, properly heat accelerated thermostat will provide a completely satisfactory temperature control throughout the home. Extra complication and costs in controls is unnecessary with electric heating."

But won't a single thermostat bringing on the current to the electric heating unit under the circumstances described result in light flicker and noisy operation?

"We have observed no flicker or extraordinary noise in the 5.7 kw step in the control starting the electric heating unit in the Lennox electric furnace," Norris commented.

How do you relate the volume of air to be handled, with the proper temperature rise for heating purposes, to the size or rating of the electric heating unit in a central ducted system?

"Most electrically heated homes are insulated so that the heat loss is down between 25

How to be the LEADER

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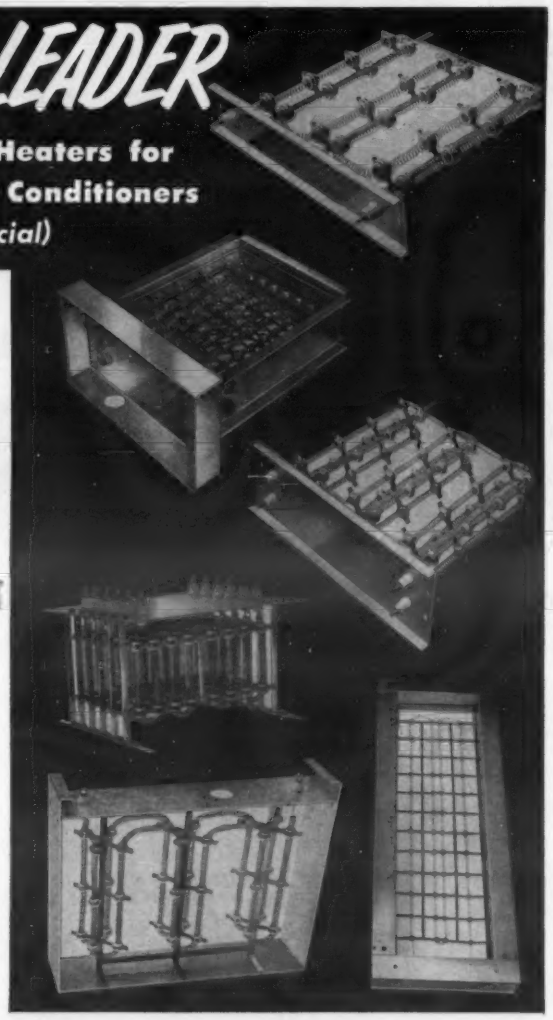

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223 Ash Street Akron, Ohio

and 36 Btu per sq ft of floor area," Norris began his answer. "If you set the blower of a ducted central system to produce approximately four air changes in the occupied space, you will find that the temperature rise in coldest weather runs in the neighborhood of 50°. This is in contrast with the 100° temperature rise rather commonly accepted with gas and oil forced warm air furnaces.

"Our 11.4 kw electric furnace has a blower that will produce from 600 to 1,200 cfm quietly. The average home that will use this size of electric furnace will require around 750 cfm."

Perimeter-Type System Problems Outlined

What are the problems in year-round air conditioning with a perimeter type air distribution system, making use of extended baseboard diffusers something of a troublesome matter?

"The extended baseboard diffuser, which is usually 3 or 4 ft long, does an excellent heating job," Norris declared, "but the problem with it comes on cooling. The long, narrow slot results in such a thin film of cool warm air coming from the register that it lacks throw power. It does not get the cool air up into the upper part of the room properly.

"If you want to use baseboard outlets, you should use the narrow 18-in. wide section that has larger air openings in it which gives better throw power. This is a better combination heating and cooling outlet than the 3 or 4-ft section. Be sure, however, that the drapes will never be drawn over such an outlet. If there is this danger, use a floor diffuser."

Won't there be more wear on the blower motor with a continuous air circulation type of system?

Norris said all the experience thus far indicated just the opposite—the continuous operation caused less wear on the blower motor than the frequent start-and-stop of a cycling operation.

Where Does Heat Pump Have An Advantage?

The question was asked "what are the advantages of a heat pump over the central electric heating system combined with conventional summer air conditioning or a gas or oil-fired heating system combined with a conventional summer air conditioning cycle?"

"The big advantage of the heat pump," said Norris, "is that it does an electric heating job for less power cost than that involved in straight electric resistance heating. The excellent insulation in electrically heated homes reduces the heat gain as well as the heat loss.

"Central air conditioning correctly sized to this type home, and set for an air volume of about 400 to 500 cfm per ton, will usually result in enough air motion to change the air about four times per hour in the occupied space. This is the same air volume recommended for ducted central electric heating. Therefore, the same blower setting is usually right for both heating and cooling with electricity, whether it is done with straight resistance heaters or with the heat pump."

Is There a Place For Smaller System?

Is it possible, it was asked, that as homes in the 1,200-1,400-sq ft size become better insulated and better oriented for year-round air conditioning, that there may be a demand for a smaller central cooling system, say something less than 20,000 Btuh capacity?

"It is a possibility," Norris replied, "but it is not showing up too strongly yet. Small 1,100 to 1,300-sq ft project homes with reasonably good insulation and orientation still are apt to call for cooling of between 20,000 and 24,000 Btuh.

"It is still possible, however, that as central cooling comes to these small project homes, heavier and heavier insulation will make it practical to do an adequate central cooling job with 16,000 to 20,000 Btuh. At the moment, central system cooling has not yet come in volume to homes this small."

Furnace Shipments Off 10% In 6 Months

CLEVELAND—Furnace shipments for the first six months this year totaled 523,627, some 10% less than the same period in 1959, according to National Warm Air Heating & Air Conditioning Association.

If sales patterns of the past five years hold true in the last six months, however, the 12-month figure for 1960 could be average or better, the association indicates.

Shipments in the first six months have averaged 41.2% of the yearly total for the past five years, so this could mean that the 1960 total shipments may range between 1,242,000 to 1,340,000 units, compared with the five-year average of 1,269,000 and the 1959 total of 1,409,966.

Production in the first half of 1960 totaled 646,639 units.

Winter Study of Gas, Electric Heat Planned At U. of Illinois

CLEVELAND — Various types of heating systems including single input and modulated gas furnaces, central electric furnace, and electric duct or boot heaters controlled by room thermostats will be investigated during the coming heating season by the University of Illinois for National Warm Air Heating & Air Conditioning Association.

Studies will be conducted in Research Residence No. 4 on the university campus to obtain data on over-all performance from the standpoint of comfort, drafts, flexibility, and speed of response.

This is the first time various types of heating equipment will be used during a season's study, but the association emphasizes that it continues to remain impartial to fuel or energy interests and does not intend that these studies result in a cost comparison of the fuels used.

The research program was developed by the association's Research Advisory Council and the university's research committee with the counsel and advice of Edison Electric Institute, American Gas Association, and Oil Heat Institute.

Fossil Fuel Reserves Continue To Increase Despite Growing Use

NEW YORK CITY—Worried about dwindling supplies of fossil fuels?

This doesn't seem to be an immediate problem, judging by figures on "proved reserves" of crude oil, natural gas liquids, and natural gas prepared jointly by American Gas Association, American Petroleum Institute, and Canadian Petroleum Association.

In a report distributed to participants who attended the recent Heating and Power Conference held by Headquarters, U. S. Air Force, estimates of these associations show that reserves have actually been increasing even as production increased.

In the United States at the end of last year there were proved reserves of 31,719,347,000 barrels of crude oil, 6,522,308,000 barrels of natural gas liquids, and 262,596,593,000,000 cu ft of natural gas.

Figures for Canada run approximately one-tenth of the above.

Although the proved reserves far exceed current consumption, the associations make no estimates as to the probable life of the reserves.

Mears Markets Improved Two-Stage Electric Heat Thermostat In Northwest

PORTLAND, Ore. — An improved thermostat for control of two-stage electric heat in residential installations is currently being promoted throughout the Pacific Northwest in preparation for a more general national barrage, according to Mears Electric Controls, Inc.

By controlling both circuits of a two-stage system, the modulating thermostat permits one low-wattage circuit to provide heat during coldest weather, Mears explained.

This eliminates hot spots near the heating unit and virtually ends wall streaking caused by rapid air convection.

Mears is promoting the modulating thermostat by direct mail and trade advertising to electrical contractors, distributors, utilities, architects, and engineers in this area.

If this pattern proves successful, the same program may be followed in other areas where electric heat has competitive advantages, he said.

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

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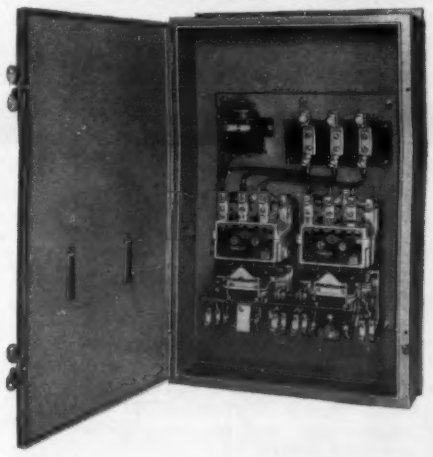
Designed for the Air Conditioning and Heating Industries

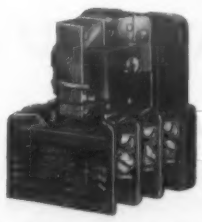


Choose from this Furnas Electric complete line of magnetic starters. Now, compact controls with pressure connectors, dual voltage encapsulated coils and front accessible terminals simplify installation.

Years of design and field experience have resulted in controls which far exceed the rigorous requirements of the industry.

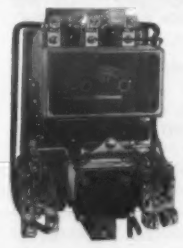
REDUCED VOLTAGE STEP STARTING

Save by specifying Furnas Electric reduced voltage starters. In between sizes, 1¾ & 2½, conserve space and reduce installation costs. Available in Part Winding, Auto-transformer with closed circuit transition and Primary Resistance types.



SPECIFIC PURPOSE CONTACTORS

20, 30, 40 Amp. 2, 3 and 4 pole devices, all with interchangeable mounting dimensions. These compact contactors are designed for heavy-duty service in Open and Type 1 enclosures. Magnet design has "No-Kiss Potential" feature—positive pull in and drop out.



GENERAL PURPOSE CONTROLS

Furnas Magnetic Starters, ruggedly designed to provide complete satisfaction, are available through size 6. Dual voltage coils, "Trip-Free" thermal overload relays and Furnas in-between sizes 1¾ and 2½, plus features such as moisture proof coils and silver-cadmium oxide contacts assure long trouble-free operation.

Write for Bulletin 36-B1 to see how you can profit by using Furnas Electric controls, 1111 McKee Street, Batavia, Illinois.

A80

FURNAS

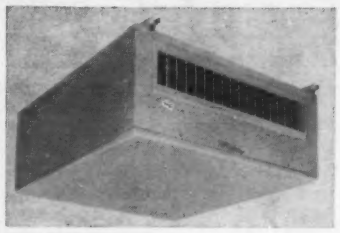
FURNAS ELECTRIC COMPANY

BATAVIA, ILLINOIS

SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

'Seasonmaker' Combines Rounded, Square Lines

● By combining rounded and square lines, it has introduced a newly-designed large capacity "Seasonmaker" air conditioner "for quiet, dependable heating and cooling, requiring less installation space," according to McQuay, Inc., Dept. AH&RN, 1600 N.E. Broadway St., Minneapolis 13.



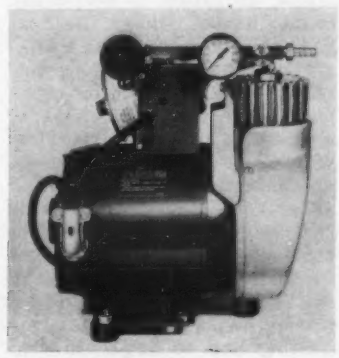
The modern design concept offers an attractive heavy gauge continuous galvanized steel cabinet for the most rugged service for conditioning apartments, schools, office buildings, hospitals, motels, hotels, stores, residences, and shops, the company said.

Two types of Seasonmakers are available—the ceiling unit for suspended installation and a hideaway model for installation above a furred ceiling or other concealed location. Nominal capacities are from 2 to 10 tons and ceiling models have direct-drive or belt-drive motors.

"McQuay Seasonmakers are designed for use with a hot or chilled central water supply system," it was pointed out. "They are also available for refrigerant operation. Their three-speed operation and the double drain pan with closed cell insulation for protection against sweating and auxiliary drain pan to catch condensation from the control or shutoff valve are features of the units."

Dispensing System Saves 90% on CO_2 Bills

● "A savings of 90% or more on CO_2 bills" is claimed for "AIR/CO_2 Pressurizer," a draft beer and pre-mix beverage dispensing system "that mixes a predetermined ratio of CO_2 and pure air," according to Winslow Mfg. Corp., Dept. AH&RN, 3695 E. 10th Ct., Hialeah, Fla.



"By using only a 10% mixture of CO_2 as the preservative and 90% air for the dispensing pressure, the user can cut CO_2 costs and at the same time eliminate foamy or 'wild' beer or beverages due to excessive CO_2."

The AIR/CO_2 Pressurizer, the manufacturer claims, "does away with the problem of over carbonation of drinks, ends flat drinks, and lets the user choose just the right amount of CO_2 to retain the life of the drink." The device also "makes it possible to dispense drinks with pure air alone whenever CO_2 is not available," the company said.

The pressurizer comes equipped with a Winslow oil-less air pump and also features the exclusive Winslow air purifier, which eliminates odors, bacteria, and other foreign matter before it reaches the pump, it was stated. The complete unit can easily be attached to any present dispensing system or to any new installation.

Furnace Line Features Compact Design

● Compact design is the keynote of a new line of gas-fired counterflow furnaces it is now manufacturing, according to Armstrong Furnace Co., Dept. AH&RN, 851 West Third Ave., Columbus 12, Ohio.

Companion units to the previously-introduced Armstrong 700 Series gas-fired upflow units, the new 700 Series counterflow models are presently available in 60,000, 80,000, 100,000, and 120,000 Btu sizes. Models rated at 140,000 and 160,000 Btu will be available in the near future.

Cabinets on the 60 and 80,000 Btu models are 12 in. wide, 25½ in. deep, and 59 in. high. The 100 and 120,000 Btu models are the same height and depth and 20 in. wide. All units are AGA approved for installation with 1 in. clearance from combustible materials at the top, rear, and sides and 6 in. clearance at the front, it was stated.

Flue connections are 4 in. diameter on the 60 and 80,000 Btu models and 5 in. on the 100 and 120,000 Btu models. Other features include a new, "high efficiency" sectional heat exchanger, "Accoustifoil" (foil-faced glass fiber) cabinet liners, built-in "easily removable" permanent-type filters as standard equipment, and blowers sized to meet air-moving requirements for air conditioning as well as heating, the company said.

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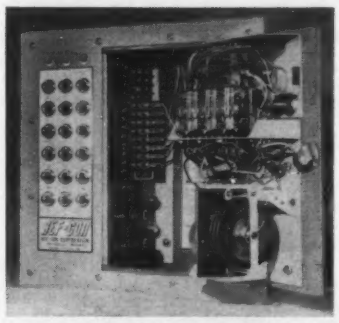
Thermoelectric News from Tecumseh

With the recent acquisition of Ohio Semiconductors, Tecumseh is now able to offer the refrigeration industry a line of proven thermoelectric devices for research and development work. We are able to offer engineering assistance in the application of either single couples or modules in prototype quantities and have the production facilities to satisfy your future requirements for these devices. Interested companies are invited to contact Tecumseh for additional information on how we can assist you in the field of thermoelectricity.

HAVE YOU SEEN WHAT TECUMSEH'S DOING

Nobody disputes the fact that the Tecumseh name has been prominent throughout the history of modern refrigeration and air conditioning. More than forty million Tecumseh compressors are currently in service around the world. Their extremely low percentage of field failures is proof of their dependable performance. While it is true that this record has been established largely outside the commercial refrigeration market, it is also true that the same dependability, the same design improvements, and the same production efficiencies, are in every instance incorporated into the Tecumseh commercial product line. These compressors and condensing units now meet all popular requirements.

Alarm Warns Against System Failure or Theft



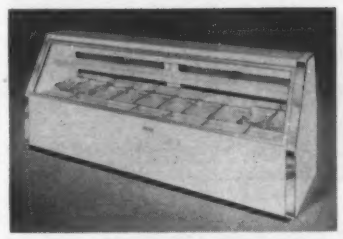
"Ref-Con," an electronic alarm system which warns of refrigeration failure, fire, theft, or power failure, is being offered by Em-Co Sales Co., Dept. AH&RN, 803 Columbia Ave., Griffith, Ind., national distributor. Recommended applications include supermarkets, frozen food lockers, drugstores, and dairies.

"Basically," it was explained, "Ref-Con is an electronic brain designed to monitor temperatures, fire and burglar alarms, and sources of power. When danger threatens, Ref-Con flashes immediate alarm signals—locally or to remote locations.

"In monitoring refrigeration, Ref-Con automatically compensates for the normal defrosting cycles, thus eliminating false alarms. The master annunciator panel is located at the protected place of business—the remote unit may be placed at any desired location.

"There are two standard sizes—an 18-circuit model and a 36-circuit model. It is designed to be flush-mounted and requires very little space."

The company added: "When refrigeration fails, Ref-Con will give both audio and visual alarms of any abnormal temperature change. In case of fire or burglary, the alarm can be given at the local fire or police department."



Improves Meat Case

● A new and improved double-duty, two-shelf service meat display case has been announced by Sherer-Gillett Co., Dept. AH&RN, Marshall, Mich.

The newly styled case comes in 8 and 10-ft lengths.

Want More Details?

ADDITIONAL details on products that are described on these pages may be obtained by writing the manufacturer at the address given in each What's New story.

Air-Cooled Condensing Unit Claims Quietness

● Production of a 2-hp (22,000 Btuh) remote air-cooled condensing unit in its 938 series has been announced by Mueller Climatrol division of Worthington Corp., Dept. AH&RN, 2005 W. Oklahoma Ave., Milwaukee 1. Wis.

"The new 938-21 has a large extra capacity centrifugal blower for quiet operation," it was stated. "The blower is designed to operate slowly to reduce wear and air noise. This, plus sealed ball bearings and special cushion-mounts, reduce sound levels substantially.

"Both side panels are removable and all components are accessible for installation and service. Many parts and controls of the 938 series are standardized and interchangeable to minimize stock problems. Units are shipped assembled, precharged with refrigerant, and prewired."

Other 938's are available in 3, 4, and 5-hp sizes. All units are rated in accordance with ARI standard 210-58, it was noted.

New Pressure-Sensitive Sealing Tape Bowed

● A line of pressure-sensitive felt sealing tapes marketed under the Presstite brand name has been announced by Presstite Div., American-Marietta Co., Dept. AH&RN, 39th & Chouteau Ave., St. Louis 10.

Suggested uses are for sound-deadening, cushioning, dust and moisture seals, anti-squeak, and insulation.

The three tape types are identified as the Presstite No. 500 Series. Untreated felt with adhesive on one side and an easily removed protective backing is Presstite No. 500. Asphalt-treated felt with pressure-sensitive adhesive is Presstite No. 505. The third type is wax-impregnated felt, chromate treated, and is identified as Presstite No. 508. The latter also protects against corrosion and fungus.

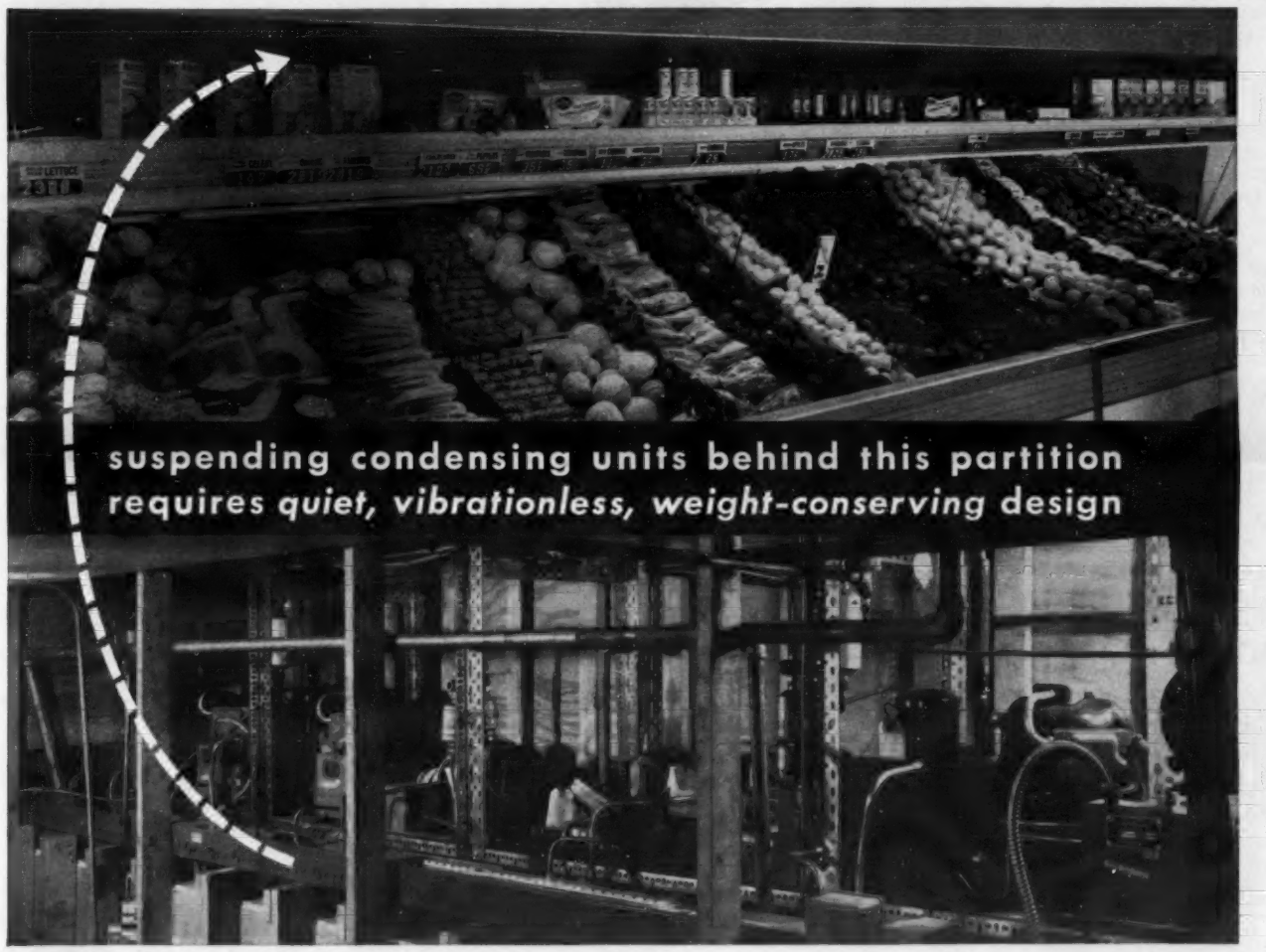
Insulation Sealer Cuts Labor, Material Costs

● A new insulation sealer claimed to provide maximum protection for all commonly used types of insulating materials and yet reduce protection costs substantially has been introduced by the Glidden Co., Dept. AH&RN, 900 Union Commerce Bldg., Cleveland 14, Ohio.

The product, called "Insulcap," is specifically formulated as a barrier against loss and inconvenience caused by condensation on insulating equipment exposed to moisture and temperature variations. Typical applications areas include covered ductwork, steam pipes, hot water lines, furnaces, breechings, converters, and digesters.

Insulcap cuts both labor and material costs by priming and finishing with one material, and glue sizing is eliminated, according to the company. It is almost completely odorless when wet, enabling application without discomfort in close quarters, and is completely odorless when dry, Glidden said, adding:

"The product is ready to use without thinning and is easily applied with wide brush, spray gun, roller, or mitten. It is available in white in 1-gal cans, 5-gal. steel pails, and 55-gal drums. If other colors are desired, they may be obtained through the use of Glidden's 'Dramatone Multipurpose Tinting System.'"



IN COMMERCIAL REFRIGERATION THESE DAYS?

Typical of the installation flexibility possible with Tecumseh, the water cooled units pictured above have been mounted directly over a 12-foot produce case. This positioning alone points up three major design advantages; *ultra-quiet* . . . necessary in being located so close to customer traffic below, *vibration-free* . . . to prevent "chatter" transmission to the non-supporting partition built around the units, and *low weight factor* . . . permitting the units to be suspended from the ceiling. Along with conserving floor space in the installation of remote condensing units, the operating efficiency of these Tecumseh hermetics is second to none. These five units—ranging in size from ¾ to 3 H.P.—have supplied the varying refrigeration requirements for the produce case mentioned, a 3-door upright ice cream cabinet, an 11-door upright frozen food cabinet, an 8-door upright beverage case, and a 30′ open air curtain case . . . *without a single service call required.* Consult your local contractor or Tecumseh wholesaler for complete information on the entire *new* Tecumseh commercial line.

forty million compressors in the field

TECUMSEH PRODUCTS COMPANY

MARION, OHIO
TECUMSEH, MICHIGAN

FOREIGN OPERATIONS DIVISION: Tecumseh, Michigan

CANADA: Tecumseh Products of Canada, Limited, 1667 Dundas St., London, Ont.

TECH CENTER

by Frank J. Versaci, Technical Editor

Low Temperature Refrigeration & Cryogenics (3)

CRYOGENICS, correctly defined, is the study of the properties of materials at ultra-low temperatures.

The term is increasingly being misapplied to the techniques used in attaining the low temperatures required for cryogenic studies.

This group of articles surveys cryogenics, as such, then proceeds to discuss briefly the several refrigeration techniques employed to reach low temperatures and the installation and service problems which are peculiar to such applications.

Designers of low temperature refrigeration systems must make arbitrary selections from among many factors. Unfortunately, in the eyes of many, the state of the art is still such that some manufacturers design by trial and error.

A compressor manufacturer cites an example: One low temperature equipment producer set up circuitry which called for 12 hp to develop 20,000 Btuh. Properly selected and incorporated, an 8-hp pump did the job —giving 24,000 Btuh. The producer's design would have required compression ratios of 3.5 and 8.45; the compressor manufacturer's design came out with compression ratios of 5.1 and 5.7.

"Many firms design by trying one compressor, and if it doesn't work, getting the next bigger one," says another compressor engineer. "They don't really analyze the jobs." In contrast, this engineer claims that a German firm has obtained -280°F using ethane as a refrigerant in three stages.

An important factor in design is that the power required for low temperature refrigeration is many times as great as for equal amounts of heat removal at higher temperatures. Other factors:

High discharge temperatures may cause oil carbonization, burned valves, lubrication difficulties, less efficient use of evaporator.

Oil may not return from evaporator to compressor because of low flow of refrigerant.

Where equipment is expected to pull down from ambient to very low temperatures, the motor must be oversized. Air-cooled condensers also may need to be oversized a bit. These last factors are not as important if the compression system is always to operate at a relatively fixed temperature.

Some engineers tend to favor cascade over multistaging because lower temperatures may be reached without going into vacuum. Thus the popularity of the R-13 and 22 cascade system.

"One major problem relating to the use of R-13," says Charles F. Conrad of Conrad, Inc., "is the consideration that at room temperature a container with liquid R-13 would have an approximate pressure of 535 psig.

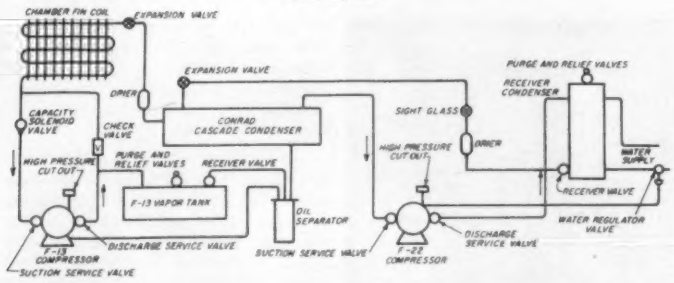
"Since refrigeration equipment of conventional manufacture is not designed for such high pressure, methods must be used to prevent the high pressure from developing.

"Basically, the R-13 system (Fig. 1) has a limited vapor pressure charge which permits all of the refrigerant to be contained in the system in vapor form at a maximum gauge pressure of 15-175 psi with the machine idle at room temperature. This is accomplished by connecting a vapor storage chamber in the system.

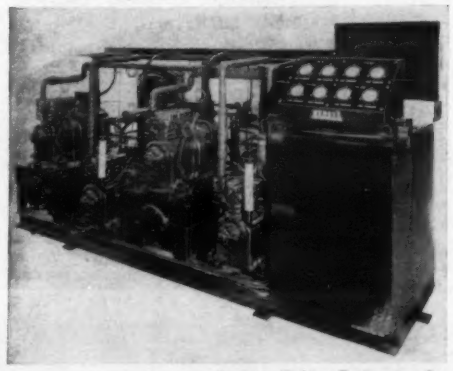
"To produce the refrigerating effect, the stored R-13 vapor is cooled and condensed and circulated by the R-13 compressor through the control valves and

(Continued on next page)

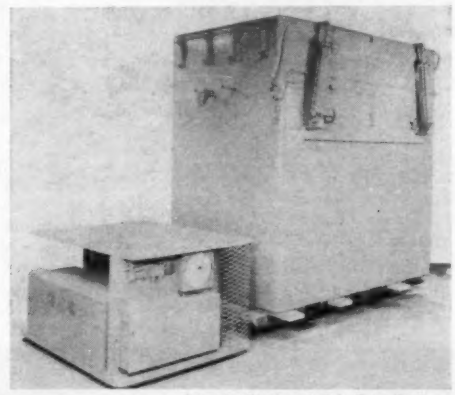
FIG. 1—Typical layout of Refrigerant-13 and 22 cascade system as manufactured by Conrad, Inc.



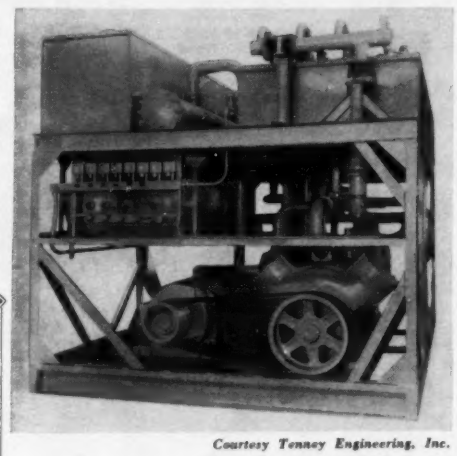
BELOW: Four examples of manufactured low temperature equipment.



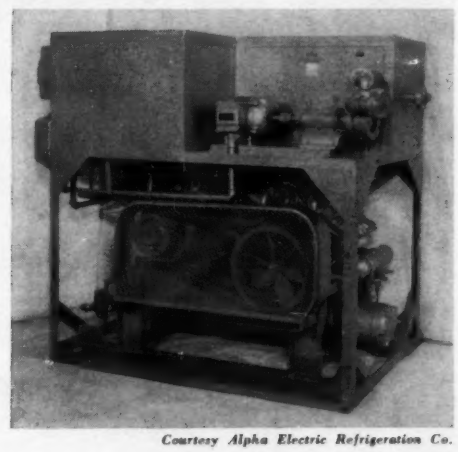
Courtesy Webber Engineering Co.



Courtesy Cincinnati Sub Zero Products



Courtesy Tenney Engineering, Inc.



Courtesy Alpha Electric Refrigeration Co.

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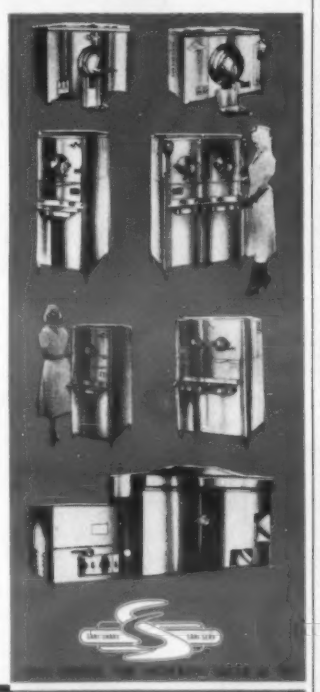

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FREE PARKING AND FAST COUNTER SERVICE AT THESE 4 BIG WAREHOUSES

(Continued from preceding page)

the cooling system. The R-22 machine is used primarily to refrigerate the condenser for the R-13 system, and it discharges the heat to either a water-cooled or air-cooled condenser."

Because the R-13 is vapor charged, and its pressure controlled, standard components may be used. Expansion valves, compressor, tubing, limit switches, and the like designed for Refrigerants 12 and 22 are frequently used.

But service and maintenance problems with low temperature units are not conventional. Problems need not be excessive, but they are different.

A simple thing like pump-down can be a complex job on low temperature circuits.

Several servicemen have told the NEWS that "No more know-how is needed to service low temperature equipment than to handle normal service work," but the experience of users contradicts this opinion.

"Commercial service people are always in a hurry," says one owner. "They come in and want to start slipping gauges on right away, with no diagnosis, no thought."

The NEWS knows of one serviceman who hurriedly began charging from a cylinder of refrigerant on the customer's premises. Only when he blew the relief device did he realize he was charging R-13 into the R-22 cycle! (R-13 is charged in vapor phase until a predetermined pressure is reached.)

The familiar manufacturer's lament that service people don't read the manuals and literature provided is doubly significant in low temperature work.

Low temperature technology is still moving so rapidly that there is as yet no standardization. It is impossible to have a general service manual. But each customer is usually given complete descriptive and service information with his unit. The wise serviceman will ask to see this data, and study it, before he touches a low temperature system.

A very important consideration in servicing the refrigeration units on environmental equipment is that the refrigeration is but a part of a complex, integrated system with controls and recorders, and it is impossible to work on one phase of the equipment without in some way encountering and affecting the others. Wiring is complex on environmental equipment.

While most manufacturers of low temperature units have engineering and service help on hand, they cannot cover all areas of the country to which they sell. Some of the companies will train an owner's employe or a refrigeration contractor of the owner's choice to handle the specific equipment.

Low temperature refrigeration is growing. It offers a challenge and an opportunity to the alert contractor, if he is willing to make the effort to familiarize himself with the field's specialized demands.

(The End)

file guide: CRYOGENICS: refrigeration

W. G. Smith

Van Newenhoven

Worthington Appoints Van Newenhoven, Smith As Chief Engineers

HARRISON, N. J.—A. J. Van Newenhoven has been appointed chief engineer, reciprocating compressor section of Worthington Corp.'s Air Conditioning Div., and Wilbur C. Smith has been named chief engineer of development, single stage centrifugal systems at the division.

Van Newenhoven was formerly senior development engineer on reciprocating compressors. Smith has been product engineer of special systems, petrochemical systems, and packaged liquid chillers.

New Orleans Contractors 'Shelve' Plans For 'Vacation' To Promote Licensing

NEW ORLEANS—Air conditioning and refrigeration contractors here have "shelved" their plans for a "vacation" protest against the city's "failure" to pass a licensing law.

Reasons for dropping the proposed walk-out varied. Increasing numbers who said they would participate began expressing a fear that it would be "bad public relations."

Others said the "vacation" could not be a success without the wholehearted support of everyone in the trade. Still others feared the walk-out would be interpreted as a secondary boycott. And a few placed the hopes back in the hands of the city councilmen.

As for those who continued to think the "vacation" idea is a good one, even these admit that now—with the approach of cooler weather—the walk-out would have little effect.

"I guess you can just say the plans have been shelved," said Philip J. Thompson, president of two local trade associations. "I suppose we'll now just have to keep hammering away at city hall in hopes that we'll finally get help there."

The protest, originally set to begin June 1, was postponed three times during the summer. A reported 90% of contractors in the New Orleans area had supported the idea at its birth.

The proposed licensing law was first presented to the city council in October, 1959, and was taken under advisement by that group last February.

Thompson is president of the Master Refrigeration & Air Conditioning Association, and the Louisiana Refrigeration & Air Conditioning Contractors, Inc.

Autolite Purchasing Marshalltown Mfg.

TOLEDO — Sale of the net assets of Marshalltown (Iowa) Mfg. Co. has been approved by shareholders of the Iowa company, according to Marshalltown President J. M. Considine.

Autolite President R. H. Davies said that purchase of the 48-year-old manufacturer of industrial instruments and pressure gauges will be a natural complement to Autolite's own instrument and gauge division.

5-fan Binks cooling tower. Original 2-fan unit has operated since 1951 without need for replacement of any component parts.

Chief Engineer Karl Hecht at control panel of Binks cooling tower. Tower cools 7,050 GPM.

AT HARRIS TRUST & SAVINGS BANK, CHICAGO

modular design, servicing ease determine cooling tower choice!

The first Binks 2-K tower, erected at the Harris Trust & Savings Bank in 1951, has required less than one day's maintenance per year and has given satisfactory service. When the bank decided to build a new 23-story building in 1959 it selected a Binks tower to retain continuity in their equipment.

Modular design of the Binks 2-K made it simple to add a 3-fan section to the original 2-fan installation. Standardized construction eliminated the need for expensive modifications.

It's easy to specify Binks standard cooling towers. Whatever your requirements . . . capacity, quietness, induced or forced draft . . . there's a Binks cooling tower that fits your needs exactly.

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. . . write to the address below. Give dimensions, capacities and other specifications and performance data needed.

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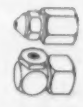

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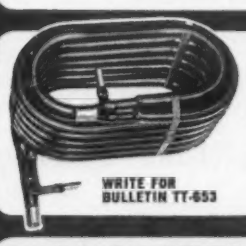
WRITE FOR BULLETIN AV-4



WRITE FOR BULLETIN TT-653

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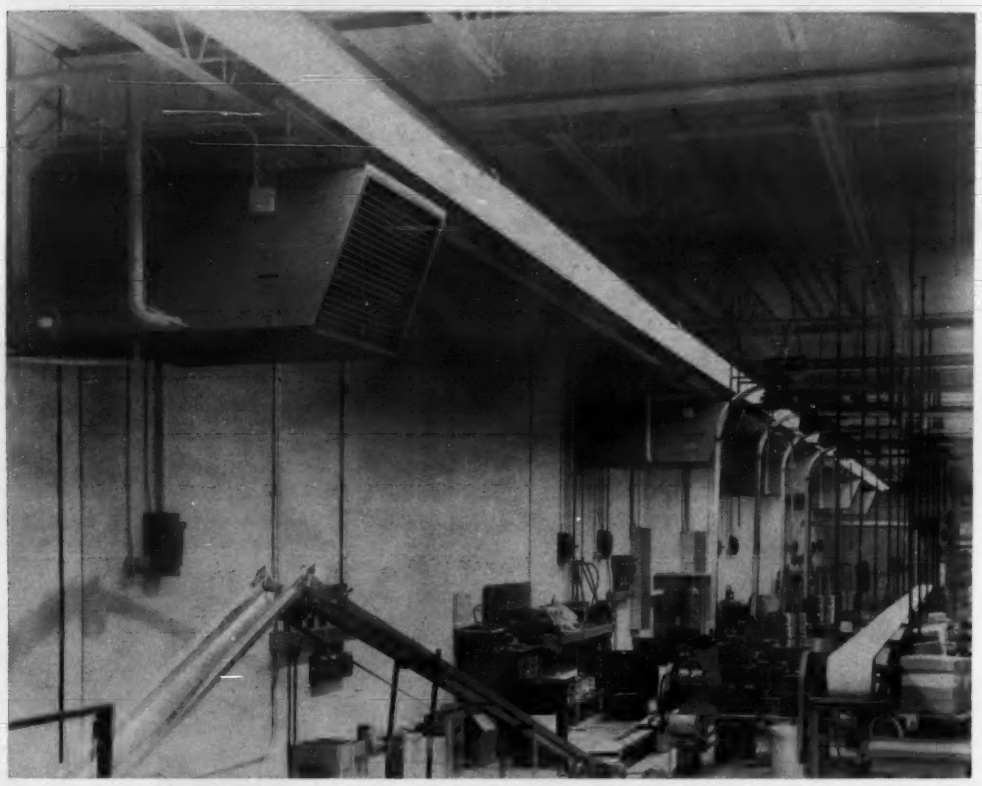
7 Air-to-Air Heat Pumps Provide Comfort Cooling, Heating for Book Match Plant



CEILING-SUSPENDED package air-to-air heat pumps provide comfortable working conditions in the D. D. Bean & Sons plant in Winston-Salem, N. C.

* * *

WINSTON-SALEM, N. C.— Economical comfort cooling and heating for a book match manufacturing plant here is being provided by seven air-to-air remote heat pumps.

At the D. D. Bean & Sons plant, opened a little over a year ago in the Forsyth County Industrial Park, six 7½-hp units and a 3-hp unit, all Westinghouse, are cooling and heating an 18,000-sq ft. single floor manufacturing and office area.

To cool the manufacturing area, which measures 180 by 70 ft, all six 7½-hp air handling units are lined up along the exterior 180-ft wall. Suspended from the ceiling 13 ft above the floor, each unit has an effective air throw of 60 to 75 ft.

Air spreads along the ceiling and settles into the working zone without creating uncomfortable drafts.

Return air is brought back to the units with intake through the filter section in the rear of each air handling unit. A fresh air duct connection extends through the rear wall and provides up to 20% fresh air circulation for indoor ventilation.

To cool the 30 by 35-ft office area, in one corner of the plant and at the opposite end from the six units, the 3-hp air handling unit is horizontally suspended above the office drop ceiling, with ceiling supply and high wall return. A condensate line runs from the air handling unit through the exterior wall, and down to grade level.

To facilitate service, outdoor sections are mounted at ground level on concrete slabs adjacent to the units they serve.

Operation of each heat pump is controlled from a heat-cool thermostat located on the wall adjacent to each suspended air handling unit. Operation of heating and cooling is automatic, with constant fan operation available for use to provide mild weather ventilation.

The 3-ton office unit is controlled from an indoor thermostat located in the accounting area.

For the heating cycle, the heat pumps are augmented with auxiliary three-step strip heaters placed on the building's 440-volt service. Indoor section fan motor and outdoor unit are on conventional 220-volt service. This, it was explained, avoids expensive transformer voltage step down and provides most economical operation.

During heating operation, the first stage of the two-stage heating thermostat controls operation of the heat pump compressor for heating output, dropping into the second stage of heating when auxiliary heating elements are called for.

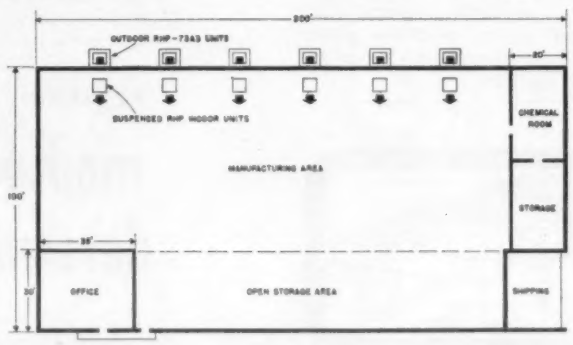
Three outdoor thermostats located in a weather enclosure on the outside wall will call for auxiliary strip heat in three steps, based on outdoor air temperature and the control of the desired indoor temperature.

By sequencing the auxiliary heat, more economical operation is achieved, and kilowatt load is lowered.

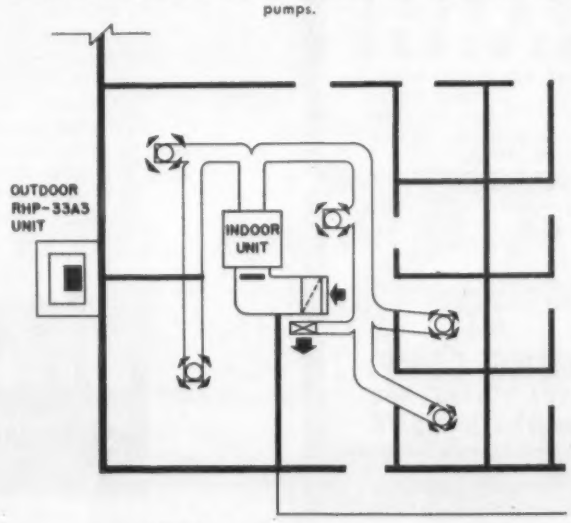
Installed cost of the heat pump was said to be less than $1 per sq ft of floor area.

A 30-ft deep open storage area opposite the heat pumps in the manufacturing area is not now air conditioned. However, if it is converted to manufacturing area at a later date, an additional two heat pumps will be installed to cool and heat it.

EXTERIOR view of plant shows outdoor sections of remote heat pumps and ventilation openings.



PLANT LAYOUT shows location of suspended unit reverse cycle heat pumps.



DETAILS showing office area layout.

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Photo on Location by Ehrenberg

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Re-Educating Dunham-Bush Sales Force

PRODUCT MANAGER for Dunham-Bush air conditioning products, John Roth, explains operation of Brunner compressor to a group of company's sales engineers. Taking it in, are (l. to r.) George Williams, Barrett Saunders, James Gallea, Dick Daume, John Ostrander, and Clark Akers.

WEST HARTFORD, Conn.—Dunham-Bush, Inc. main offices here were the scene recently of updating sessions for company sales engineers.

Topics concerned product engineering developments, and application trends.

John Roth, air conditioning product manager, said that due to rapid strides being made in new design and method of application, it is essential that all personnel be kept up-to-date by continuous re-education. This will enable Dunham-Bush personnel to provide the utmost in technical assistance in the air conditioning, refrigeration, and heating industry," he pointed out.

Roth conducted classes on Dunham-Bush air conditioning products, selection and application of Brunner multi-drive compressors.

Other product managers participating included: Cliff Kimmel covering "Brunner-Metic" and Heat-X products; George Davis on Dunham-Bush refrigeration and water saving products, coil selection, and general theory; Jim Gregory updated on Dunham-Bush Heating products; Joe Querner discussed cast cooler products. System application of all products was jointly conducted by Kimmel and Davis.

Dunham-Bush manufactures a complete line of air conditioning, refrigeration, heating, and heat transfer products, with factories in Riverside, Calif.; Michigan City, Ind.; Marshalltown, Iowa; West Hartford; Canada; and London, England. Distribution facilities are worldwide.

You Asked About It

From the many requests for information it receives, the NEWS will select and publish some of general interest.

Q. What is the K-factor for the floor of a normal temperature walk-in cooler when it is insulated? When it is not? We have received several vague answers to these questions, but no K-factor.

J.S.—Detroit

A. The answers have been "vague" because there is no accepted theoretical answer, although there is a practical one.

NEWS conversations with one of commercial refrigeration's acknowledged authorities can be summarized this way: "Nobody knows the actual K-factor for the floor of a normal temperature (38°F) walk-in cooler. In practice, it is either ignored or taken as the same as the ceiling, which is equal in area to the floor.

"Actually, of course, the K-factor of the floor is less than that of the ceiling.

"Here's the data that counts though: Measurements made after such coolers have been in use show that stratified floor and ground temperatures are the same whether or not the floor is insulated. Most users do not bother with insulation for the floor. The same size machine will handle the cooler whether or not it has insulation."

Schwebel Vice Pres. of American Time Products

NEW YORK CITY — Robert Schwebel has been elected vice president of American Time Products, Inc. here, a subsidiary of Bulova Watch Co., Inc. it was announced by Gen. Omar N. Bradley, board chairman of both organizations.

Schwebel will continue as general manager of Bulova's instrument jewel bearing division. He will serve as the chief administrative officer under J. N. Heed, president of the subsidiary, thus creating a new post at American Time.

American Time Products manufactures electronic and mechanical frequency controls, ultrasonic cleaning devices, and other timing and precision instruments. Recently it announced plans to enter the electric heating controls field.

Sporlan Valve Transfers Weir

ST. LOUIS — Sporlan Valve Co. has announced the transfer of Peter H. Weir from its home office to Minneapolis.

Weir will replace Malcolm Moore who resigned to take a position with the U. S. Patent Office in Washington, D. C., and to study law at George Washington university.

Weir has gained engineering, sales, and sales administration experience in the home office.

Alco Valve Engineering Conference

ATTENDING Alco Valve's Engineering Conference were: Left to right seated—H. A. C. Smith, E. R. Knepper, R. E. Spence, M. E. Caesar, G. J. Boepple, J. E. Dube, C. B. Lockwood, A. A. St. Germain, R. Willner, R. B. Tilney. 2nd Row—K. Robertson, A. L. Baker, D. Moore, E. Ludwig, V. V. Solomon, A. H. Tegtmeyer, R. Paddock, R. Baseler, W. Montgomery, R. N. Meyer, T. J. Phillips, J. W. Parrott, L. L. Larkin, L. J. Bonhotal. 3rd Row—G. Stocker, A. Carlin, J. J. Cassady, T. R. Russell, L. Trowbridge, C. Wachholtz, S. Kessler, L. S. Houghton, C. R. Davis, W. J. Franklin, P. Bartels.

* * *

ST. LOUIS—Dr. Walter O. Walker, dean of the Division of Research & Industry, University of Miami, and an authority on desiccants in the refrigeration industry, was guest speaker at a recent two-day Engineering Conference of Alco Valve Co. here.

The conference was attended by Alco's engineering staff and sales force.

"The purpose of the conference was the detailed indoctrination of the technical aspects of a new refrigerant block form desiccant, combining Silica Gel P. A. 400 and molecular sieve.

"This contribution to the refrigeration industry was made possible through a grant to the Industrial Chemical Research Laboratory of the University of Miami, which is under the direction of Dr. Walker, working in cooperation with Alco Research laboratory in St. Louis.

The desiccant is used in Alco's new "Dri-Kleaner" filter-drier.

Regional Sales Managers Appointed by Fluor

SANTA ROSA, Calif. — Recently appointed as regional sales managers for Fluor Products Co., Industrial and Air Conditioning Cooling Towers, are O. L. Pratt, southern United States, and C. J. McCann, eastern region.

McCann has been New York area sales manager.

Pratt has been associated with Fluor for seven years. He will be based in Houston, Texas.

bring head pressure DOWN

keep operating efficiency UP

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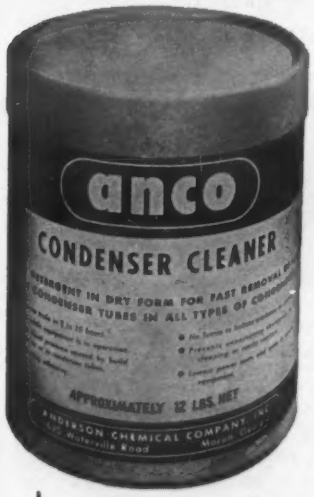

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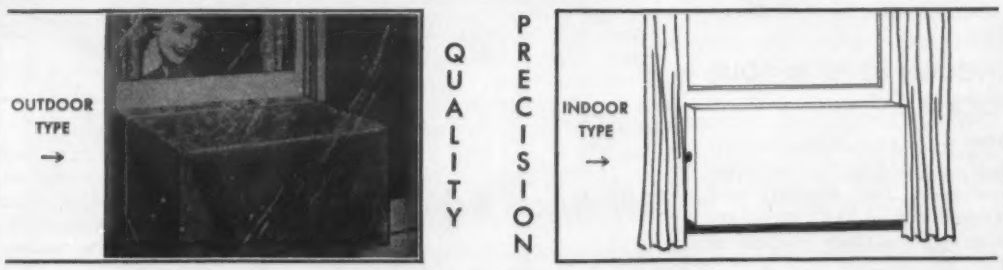

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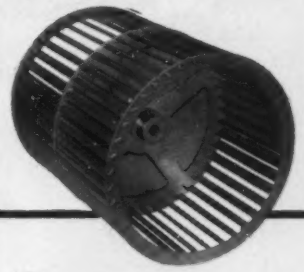

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JOHN J. SWISHER (left), who has been sales director for C. V. Hill & Co.'s Savage Ice Cream Cabinet Div., congratulates his successor, A. K. Thornley (center), as Harry N. Corbin, C. V. Hill's vice president in charge of sales, looks on.

A. K. Thornley Succeeds John J. Swisher As Director of Sales for Savage Div.

TRENTON, N. J.—Harry N. Corbin, vice president in charge of sales of C. V. Hill & Co., Inc., has announced the appointment of A. K. Thornley as director of sales of the Savage Ice Cream Cabinet Div.

Thornley has been associated with C. V. Hill & Co. for over 20 years. He has served as export manager, national accounts sales representative, advertising manager, sales promotion manager, and director of sales promotion and public relations for both Hill and Savage divisions.

He succeeds John J. Swisher, who has left the company to assume managership in a wholesale plumbing supply concern in Albuquerque, N. M.

La Crosse Announces Start of Another Addition

LA CROSSE, Wis.—In addition to the facilities begun only two short months ago, La Crosse now announces the beginning of construction of more than 27,000 sq ft of manufacturing space.

This addition with the area now under construction will bring total plant area to 168,000 sq ft, an increase of almost 50% over the original building, the company pointed out.

Capacities of In-Use Milk Tanks Studied by DISA

WASHINGTON, D. C.—Slightly more than half of the 141,544 bulk milk tanks installed on farms in the United States on Jan. 1, 1960, were to a capacity ranging from 251 to 500 gals., a survey recently completed by Dairy Industries Supply Association shows.

National breakdown on capacity of farm tanks, as of last Jan. 1 is as follows:

Tanks of less than 100-gal. capacity number 3,667, or 2.5% of the total.

Tanks from 101 to 250-gal. capacity number 40,989, 29% of the total.

Tanks from 251 to 500 gals. number 73,043, 52% of the total.

Tanks from 501 to 1,000 gals. number 20,204, 14% of the total.

Tanks over 1,000 gals. capacity number 3,641, 2.5% of the total.

In announcing the survey results, DISA pointed out that the 141,544 figure for total U.S. farm tank installations represents a slight upward revision from the 140,793 tanks which a DISA-National Association of Dairy Equipment Manufacturers survey last May had estimated were installed as of Jan. 1, 1960.

The DISA survey, reporting publicly for the first time on Canadian farm tank installations, shows that installations in Canada, as of Jan. 1, 1960, totalled 6,074—an increase of 1,600 over the 4,474 estimated to have been installed as of Jan. 1, 1959.

The province of Ontario, with 4,766 installations on Jan. 1, 1960, accounted for more than two-thirds of all installations in Canada.

Refrigerated Storage Totaled 942 Million Cu Ft In 1959

WASHINGTON, D. C.—Refrigerated warehouses in the United States—excluding Hawaii and Alaska—had a total capacity of 942 million gross cu ft as of Oct. 1, 1959, according to a survey by the Crop Reporting Service of the U. S. Dept. of Agriculture.

Approximately 482 million cu ft could hold temperatures from above 0 to 50°F and 460 million cu ft could hold temperatures of 0° or below.

Since the 1957 survey, refrigerated warehouse space increased 41 million cu ft, the C.R.S. said. Two-thirds of this space was in the 0° and below range.

Bally Names Kaiser

BALLY, Pa.—Harry Kaiser, West Palm Beach, Fla., has been appointed regional sales manager for the sale of Bally walk-in coolers and freezers in Florida and Georgia, according to Leon Prince, general sales manager of Bally Case & Cooler, Inc. here.

USDA Tests Efficiency of 'Piggyback' Trailers and Refrigerated Rail Cars

WASHINGTON, D. C.—The transport industry will know more about the "inside story" on efficiency of refrigerated piggyback trailers and mechanically refrigerated rail cars when a test run by the U. S. Dept. of Agriculture over the Burlington Railroad is completed and the data evaluated.

For the 60-hour test run from Lincoln, Neb. to Philadelphia, four, 35-ft Trailmobile "reefers" and two rail cars were wired for temperature readings to a special, instrument-carrying caboose.

More than three miles of wire was required to connect the thermocouples from 20 locations inside each vehicle to the caboose.

Two of the Trailmobile trailers were constructed with glass fibrous insulation—6 in. in the roof, 5 in. in sidewalls, and 4 in. in the floor.

The other two trailers were built with 4 in. of foamed-in-place polyurethane insulation all-around. The two rail cars were similarly constructed.

Harold D. Johnson, USDA transportation specialist, and two USDA mechanical engineers—Robert Gilfoy and Ronald Penney—recorded temperature readings from the 120 locations inside the six vehicles every two hours during the entire trip.

This was done by first "dialing in" the desired thermocouple location on a master switchboard, then relaying the impulse on to a temperature indicator where it was recorded.

In addition, a recording device installed by the USDA team on each trailer gave an accurate check on how long and how frequently each of two types of diesel powered refrigeration units operated during the trip.

Each trailed was loaded with 25,000 lbs of beef at the Lincoln slaughter-house of an eastern retail food chain. Some of the beef was carried as hanging load, some as floor load.

Upon arrival in Philadelphia, the piggyback trailers were taken from the flatcars direct to the firm's retail outlets.

A report of the findings on the test trip will be published by the Transportation and Facilities Branch, Agricultural Marketing Service, U. S. Dept. of Agriculture.

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SMALL ENOUGH TO FIT IN YOUR SHIRT POCKET

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For additional information ask your wholesaler or write to Dept. 210.

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Frigidaire--

(Continued from Page 1, Col. 2)

plained. "All the dealer needs to know to qualify the unit for the cooling job is: (1) which room is to be cooled, (2) size of the room, and (3) the electrical characteristics."

For use in bedrooms, Frigidaire has new room air conditioners available with capacities ranging from 6,000 to 9,000 Btu for cooling average areas from 270 to 385 sq ft. For living or family rooms, unit capacities are from 8,300 to 12,000 Btu for average areas from 345 sq ft up to 500 sq ft. High capacity units of from 10,000 to 19,000 Btu will cool several rooms with average areas of 405 up to 790 sq ft.

He added that 43% of room units being sold are for use in bedrooms and 30%, for living-family rooms.

FRIGIDAIRE'S 1961 Imperial room air conditioner.

"Currently, there is a trend toward installing high capacity units to cool several rooms in the house," Lehman added.

All of Frigidaire's new air conditioners are designed to fit a uniform front opening of 16 by 26 in. Some of the models are 18¼ in. deep, others 27 in.

All Models Can Be Installed by Owner

"All new models can be installed quickly and economically," it was stated. "A unique 'do it yourself' kit permits mounting in most double hung windows in a matter of minutes. All that is necessary by way of tools are an ordinary pair of household scissors, a screw driver, and pair of pliers.

"To install one of these units in the window, the do-it-yourselfer has only to follow the following simple steps: (1) mount adjustable metal frame in window, (2) install filler strips and rubber seals, and (3) slide air conditioner into position and lock into position.

"The filler strips used to enclose the units are scored at ⅜-in. intervals and can be sized by hand, without cutting, to fit any opening.

"Additional accessory kits or instructions are available for other installations such as extra wide windows, jalousies, or some of the awning type windows.

"In addition, there are metal sleeves for through-the-wall application, especially adaptable for builders to use in multiple dwelling projects or apartment houses.

"Once the new Frigidaire unit is installed, 90% of all ordinary maintenance and service can be accomplished without removing it from position. High capacity models are designed to slide out of the cabinet without disturbing the mounting installation.

"Frigidaire units are equipped with a 'Dehumidi-Coil' providing efficient moisture removal, especially important in humid areas. Centrifugal cooling fans, rubber mountings for the compressor, and insulation provide extra quiet operation. Draft-control air circulation is another feature.

"All models feature washable filters that remove in seconds from the front of the cabinet. All but one of the 1961 models are equipped with thermostatic control, fresh air intake, and three-speed fan."

Two reverse cycle "All-Seasons" models are available for 1961.

Summary of models follows:

	Suggested Retail Price
DeLuxe Models	
AD-6LD—6,000 Btuh cooling cap. (115-v., 7.5 amp)	$219.95
AD-12D—12,000 Btuh cooling cap. (208-230-v.)	349.95
Custom DeLuxe Models	
ACD-7LD—7,000 Btuh cooling cap. (115-v., 7.5 amp)	299.95
ACD-8MD—8,300 Btuh cooling cap. (115-v., 10.7 amp)	299.95
ACD-9D—9,000 Btuh cooling cap. (208-230-v.)	299.95
ACDR-9D—9,000 Btuh cooling cap. 10,500 Btuh heating cap. (Reverse cycle, 230-v.)	354.95
ACD-15D—15,000 Btuh cooling cap. (208-230-v.)	419.95
ACDR15D—15,000 Btuh cooling cap. 15,000 Btuh heating cap. (Reverse cycle, 230-v.)	509.95
ACD-19D—19,000 Btuh cooling cap. (208-230-v.)	504.95
Imperial Model	
AI-10D—10,000 Btuh cooling cap. (230-v.)	393.95

Refrigerators, Freezers

Lehman also announced that fresh new styling concepts, combined with an array of convenience design features, keynote 1961 free-standing home appliances being introduced by Frigidaire. He said that many design advancements, previously included in top models only, have been extended throughout the entire line, even in the area of budget-class appliances.

Frigidaire's 1961 appliances include 14 refrigerators and nine food freezers, plus 11 free-standing electric ranges and two mobile top-loading dishwashers.

Frostless freezing is available in five refrigerator-freezer combinations. Of these, there are three "Imperial" models with 13 and 15-cu ft capacity and two 13-cu ft medium-priced "DeLuxe" units. Also, three upright food freezers have "Frost-Proof" systems, including a 12-cu ft DeLuxe model. DeLuxe and Imperial units with 16 cu ft of capacity round out Frost-Proof freezer models.

There are three new 11-cu ft refrigerators described as ideal for small kitchens, apartments, or mobile homes. These refrigerators are 30 in. wide instead of the previous 28, but 4¼ in. lower than comparable 1960 elevens. One holds 27 more pounds of frozen food than last year's comparable model. The door is flush hinged.

Suggested retail prices of the refrigerators range from $189.95 for a 9.10-cu ft conventional model to $699.95 for a 14.53-cu ft Frost-Proof refrigerator-freezer. Freezer prices start at $199.95 (for an 11.10-cu ft conventional upright) and run to $539.95 (for a 16.10-cu ft Frost-Proof upright).

Kentucky--

(Continued from Page 1, Col. 5)

was opened this summer and attracted 520 pupils.

If this first air conditioned school is approved and proves successful, Van Hoose indicated, he plans to ask for two more air conditioned schools to serve other areas of the county.

Van Hoose affirmed that he was not advocating a 12-month school year, which has proved to be a controversial subject.

"What we want now," he declared, "are good, comfortable summer schools offering opportunities to interested students on a tuition basis.

"We feel that the comfort added by air conditioning would be a big inducement for students to attend summer school and a big factor in determining how much they get out of it."

Florida--

(Continued from Page 1, Col. 5)

tion costs through cooling.

"However, several other questions remain to be answered. The research study will seek to determine if youngsters learn more in an air conditioned schoolhouse, if operating costs are higher in an air conditioned building, if attendance is affected by air conditioning, if more effective use can be made of air conditioned schools, and if summer school attendance will increase through cooling."

Texas--

(Continued from Page 1, Col. 4)

Board of Education by common consent at this time decided we could build totally air conditioned schools for the same money, or less, than traditional buildings not air conditioned.

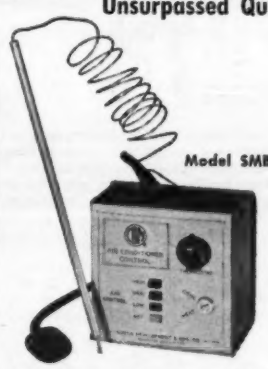
"Since that time we have built a 2,500-pupil high school, one new elementary school, and one addition to an elementary school. All have been air conditioned and costs continue to run in the same pattern established by our experience on Belaire."

Wadzeck said a two-year study on the operating cost of the new high school showed utilities averaging approximately $10,000 more per year. By sealing the building and filtering the air, he stated, a janitor can usually care for 50% to 75% more square footage.

"On our square foot assignment for janitors, it is reliably estimated we are saving $27,000 per year on janitorial labor," Wadzeck pointed out. "When we deduct the additional utility cost this leaves a sizable amount to amortize equipment."

Use CURTIS SPEED CONTROLS for Fractional HP Motors

Get Outstanding Performance, Definite Economies, Unsurpassed Quality



DELUXE AIR CONDITIONER CONTROL

. . . semi-automatic in operation . . . includes basic speed control unit with reactor and push button motor speed control switch, a summer-winter switch to set to "cool" or "heat", and an adjustable thermostat. Suitable for sub panel mounting.

Wherever shaded pole motors or permanent split capacitor motors are used by manufacturers of air conditioning units, kitchen exhaust fans, ventilating units, blowers, unit heaters, etc. . . . Curtis SPEED CONTROLS *add* that PLUS to improve this equipment.

Curtis SPEED CONTROLS provide sure reliability and overall efficiency of all fractional HP motors with these installation-proven features:

- **QUIET OPERATION**—very low noise level
- **RELIABLE SWITCH**—UL approved (Available in a rotary or push button type as illustrated)
- **REDUCED ASSEMBLY TIME**—in factory or field
- **SIMPLE, EASY INSTALLATION**—one self-contained integral unit

Step-type, 3 speeds (high, medium, low) & off position. Curtis SPEED CONTROLS with tapped reactor, gives the required air flow by introducing impedance in series with the motor.

Available in custom-built flush mounting, completely enclosed box, special plate mounting, and in deluxe air conditioning control units. Curtis can also supply the exact Speed Control unit to meet specific requirements.

TODAY . . . Write for Bulletin DS-137 for complete Curtis Speed Control data and specification sheets.

CURTIS
DEVELOPMENT & MFG. CO.
3224 N. 33rd Street
Milwaukee 16, Wis.

Wholesaler: Pacific Metals, Ltd. *Contractor,* Frank Samuels Distributing Co.

Dressed beef being conveyed from slaughter room to chill room.

At right, one of nine KRACK F1700ST ceiling units hold room at constant temperature, humidity level.

0300

"We demanded the Best . . . and got it!"

21 KRACK units at Harbour Meat Co.
hold temperatures from -15° to +52°

. . . according to Mr. Glenn Harbour, manager and partner, their meat packing plant in Tucson, Arizona, was designed and built from the ground up to assure retaining of meat quality through proper processing, cutting and aging. "Quality is extremely important—we raise our own prime beef and want to make sure it gets to customers in top condition. Since refrigeration can mean the difference between good and bad meat, we had to have units that would hold temperatures dependably, at reasonable cost. We found that KRACK standard production units filled our specifications to the letter."

Equipment installed

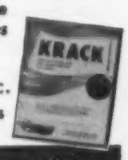
1 Ceiling mounted unit cooler—FA750F
1 Heavy duty water defrost unit cooler—ZE2000F
9 High efficiency unit coolers—F1700ST
6 Heavy duty product coolers—MA2100F
1 5-ton evaporative condenser—1AE5
1 40-ton evaporative condenser with 9 circuits—4AE40
2 Air conditioning units for meat cutting rooms—CM400AC

Write today and find out how KRACK can give you dependable low cost refrigeration and deliver performance at stated ratings

KRACK REFRIGERATION APPLIANCES, INC.

Manufacturers of Freon or Ammonia, Recirculated, Flooded or Direct Expansion Heat Transfer Equipment

REFRIGERATION APPLIANCES, Inc.
901 West Lake St., Chicago 7, Illinois



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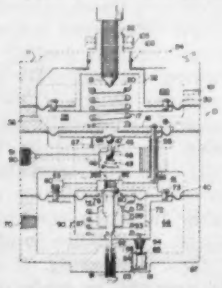
PATENTS

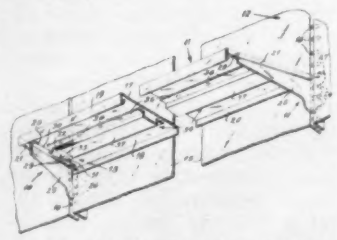
Week of June 14 (Concluded)

2,940,462. PRESSURE REGULATING VALVE. Roy K. Johanson, Milwaukee, Wis., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.



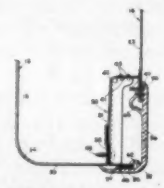
1. A pressure regulating valve comprising, a casing, a main regulating diaphragm positioned in said casing and forming one wall of a first chamber, means connecting said first chamber to atmosphere, a spring biasing member positioned in said first chamber and adapted to apply a force against said diaphragm, a second diaphragm positioned in said casing and defining with said first said diaphragm a second chamber, valve means mounted on said casing and positioned in said second chamber. . . .

2,940,601. SHELF CONSTRUCTION. Walter G. Smith, St. Louis, Mo., assignor to Hussmann Refrigerator Co., St. Louis, Mo.



3. In a shelf construction including a shelf adapted to be supported on an upright structure, a bracket having a first wall engageable with the upright structure and a second wall at right angles to said first wall, said second wall having an elongated slot extending substantially parallel with said first wall, and means for releasably retaining said bracket on the shelf, said retaining means comprising a clip member having one end retained on the shelf, the other end of said clip member having a predetermined length smaller than the length of said elongated slot and being positioned in the slot in juxtaposition with the shelf to retain the bracket on said shelf. . . .

2,940,632. REFRIGERATOR. Jack R. Dickinson, North Claverack, and Harold E. Bush, Philmont, N. Y., assignors to Foster Refrigerator Corp., Hudson, N. Y.

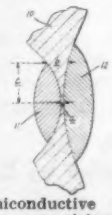


1. A refrigerator having a shell forming an outer wall and folded inwardly to form a front wall with a flange folded rearwardly from the front wall, a liner mounted in said shell in spaced relation thereto, an attaching strip on the shell having a flange overlying the rearwardly folded flange on the shell, a front wall aligned with the front wall of the shell and folded over edge portion forming an outwardly projecting shoulder, an attaching strip on the liner having an edge portion folded over the forward edge of the liner to form an outwardly projecting shoulder on the liner and a laterally folded flange. . . .

2,940,737. HEAT EXCHANGER. Ray A. Sandberg, Waukegan, Ill., assignor to Houdaille Industries, Inc., a corporation of Michigan.

1. A tube and plate assembly comprising a generally flat sheet metal backing plate having a plurality of main grooves and a parallel contiguous shallower auxiliary groove on each side of each of said main grooves and extending continuously for the entire length of the main grooves.

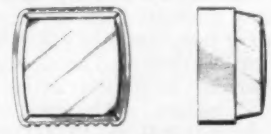
2,941,131. SEMICONDUCTIVE APPARATUS. Richard A. Williams, Collingswood, N. J., assignor to Philco Corp., Philadelphia, Pa., a corporation of Pennsylvania.



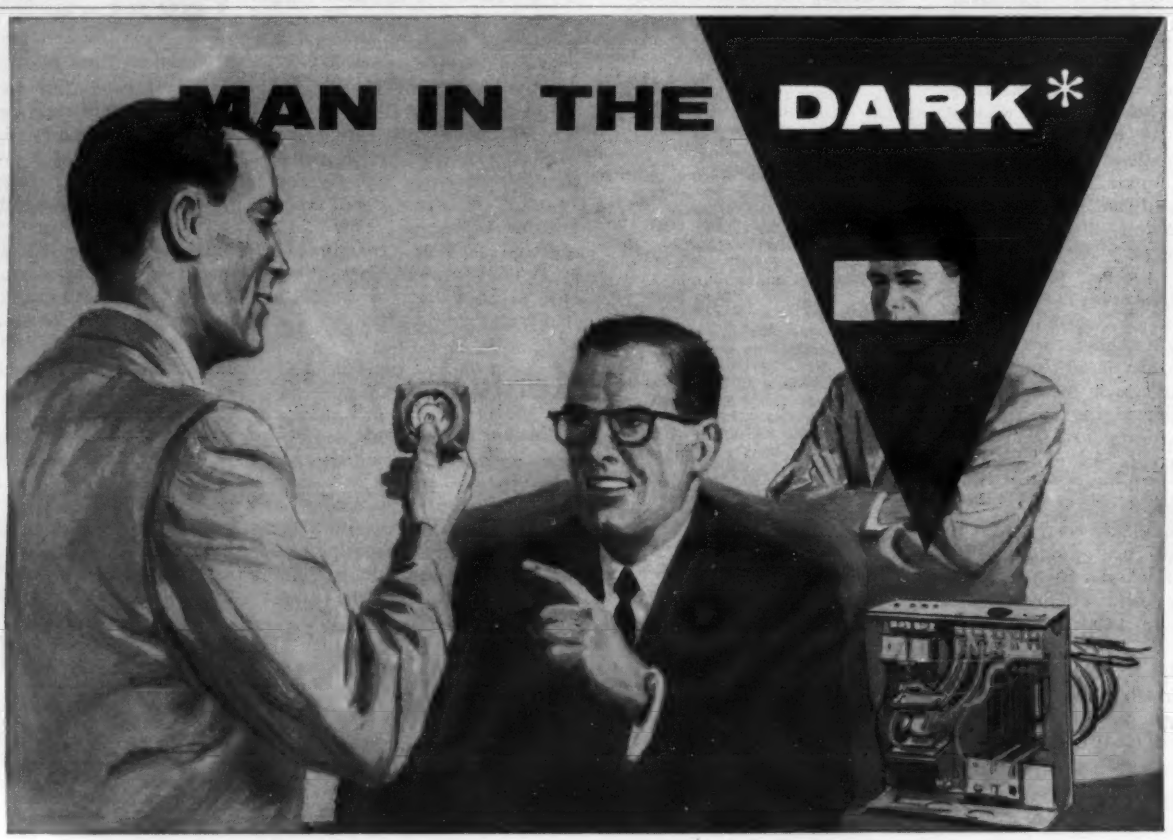
1. A semiconductive signal-translating device comprising a body of semiconductive material, an area emitter element and an opposing collector element, at least one of said elements having substantially higher curvature in the vicinity of its point of closest approach to the other of said elements than at other points thereof and being substantially mammaloid in form. . . .

DESIGNS

188,218. THERMOSTAT GUARD OR LIKE ARTICLE. Robert Rosen, Los Angeles, and Harold W. Vaughn, South Pasadena, Calif., assignors to General Controls Co., Glendale, Calif.



188,218. SPACE CONDITION RESPONSIVE INSTRUMENT. Henry Dreyfuss, South Pasadena, Calif., assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.



*"*If only I'd known about that a week ago!"*

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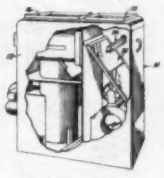
Reaching these MARKETS	Serving these FIELDS
• Air Conditioning	• Residential
• Heating	• Commercial
• Refrigeration	• Industrial

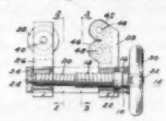
Week of June 21

2,941,265. AIR PURIFIER. Sampson Isenberg and Alfred A. Jannings, Chicago, Ill., assignors to Sampson Chemical & Pigment Corp., a corporation of Illinois.



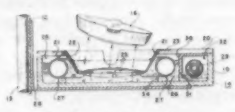
1. In a purifier for a controlled air circulating system of the type having a duct through which the air is circulated, the improvement of an elongated, germicidal ultraviolet radiating unit extending across the duct and directly in the path of air flow within the duct; support means for said ultraviolet radiating unit for supporting the latter within the duct to permit substantially 360° radiation of the ultraviolet radiations from said unit; a filter unit positioned in the duct rearwardly of the said ultraviolet radiating unit in the path of air flow; said filter unit having a surface extending across substantially the entire configuration of the duct and substantially perpendicular to the radiations from said ultraviolet radiating unit to maximize the radiation area affected by said radiations. . . .

2,941,291. TUBE CUTTER. Junior L. Fritch, Edgerton, Ohio, assignor to Kent-Moore Organizations, Inc., Warren, Mich., a corporation of Michigan.



A tube cutter comprising, in combination, a U-shaped guide frame, a screw extending rotatably freely through the base of the U frame parallel to and spaced between the two arms of the frame, said screw extending beyond the ends of said two arms, an end plate secured to the ends of the two arms of the frame, said screw having an end portion extending into said plate and having a rotatable bearing therein, that portion of the screw extending between the two arms and disposed between the base of the U frame and said plate provided with oppositely threaded lengths. . . .

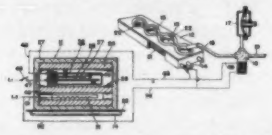
2,941,377. ICE MAKER. James K. Nelson, Columbus, Ohio, assignor to Westinghouse Electric Corp., East Pittsburgh, Pa.



3. The method of producing dry ice particles which comprises performing the following steps entirely within an atmosphere maintained at a temperature below 32°F: freezing water in a deformable mold; applying heat to the mold to melt a film of ice in contact with said mold whereby said ice is at least partially loosened from said mold; defroming said mold to forcibly eject the ice from the mold, said ice at this point having a film of water on

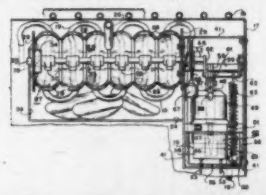
portions of the surface thereof; causing the ejected ice to impinge against a relatively fixed abutment to jar unfrozen water from its surface; and finally, storing said ice in a container. . . .

2,941,378. ICE MAKING APPARATUS. James K. Nelson, Grove City, Ohio, assignor to Westinghouse Electric Corp., East Pittsburgh, Pa.



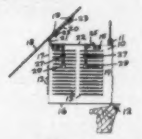
1. In an ice maker, an ice mold, means for filling said ice mold with water to be frozen, a heat storage mass thermally disassociated from the contents of said ice mold, said heat storage mass being constructed and arranged so as to be coolable from a first predetermined temperature to a second predetermined temperature within a period of time which corresponds to the period of time required to freeze all of the water in said ice mold when

2,941,379. ICE MAKING APPARATUS. James K. Nelson, Grove City, Ohio, assignor to Westinghouse Electric Corp., East Pittsburgh, Pa.



1. In an ice maker, an ice mold, means for removing the frozen contents from said mold, a thermal motor for driving said removing means, means for refrigerating said ice mold and said thermal motor, and means actuated by said thermal motor upon being refrigerated to a predetermined temperature for energizing said thermal motor. . . .

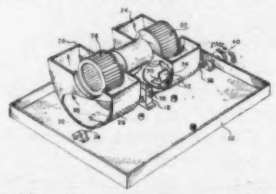
2,941,380. HEAT REFLECTOR FOR COMPRESSION TYPE AIR CONDITIONERS. William P. Garred, Box 127, Onawa, Iowa.



1. A heat reflector for air conditioner casings comprising a flat reflecting plate positioned adjacently to the outwardly extending portion of said air conditioner casing to thereby reflect sun rays therefrom, said reflecting plate being angularly positioned with respect to said casing and being positioned generally adjacently to the upper outer end thereof. . . .

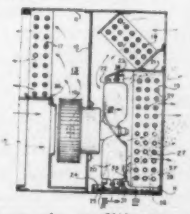
2,941,381. CONDENSATE DISPOSAL MEANS FOR AIR CONDITIONING APPARATUS. Arthur H. Eberhart, East Longmeadow, Mass., assignor to Westinghouse Electric Corp., East Pittsburgh, Pa.

1. In a reversible heat transfer system for an enclosure, a compressor, a pair of interconnected heat exchanger units, connections for circulating heat transfer fluid between said heat exchanger units and said compressor, means for reversing the heating and cooling functions of said heat exchanger units, a sump for accommodating condensate flowing from either



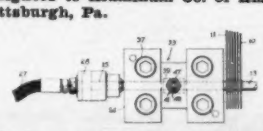
of said units, means for conveying air for the enclosure over one of said units. . . .

2,941,382. CONDENSATE DISPOSAL MEANS FOR SELF-CONTAINED AIR CONDITIONERS. Edward M. Wuesthoff, Agawam, Mass., assignor to Westinghouse Electric Corp., East Pittsburgh, Pa.



1. In an air conditioner, a condensate pan, a finned-tube condenser having the bottom edge thereof disposed in said condensate pan and spaced from the bottom of said pan, a propeller fan rotatable on a horizontal axis and disposed in closely spaced face-to-face relation to said condenser, an open bottom casing disposed in said pan and at least partially enclosing said fan and said condenser, said fan when rotating creating positive air pressure in said casing tending to exclude condensate from that portion of the pan which is covered by said casing, and means for directing condensate onto the blades of said fan for delivery to said condenser. . . .

2,941,569. PINNED TUBE EXPANSION CONTROL APPARATUS. Marshall Holt, New Kensington, Elliott W. Mason, Pittsburgh, and James B. Murtland, Jr., Natrona Heights, Pa., assignors to Aluminum Co. of America, Pittsburgh, Pa.

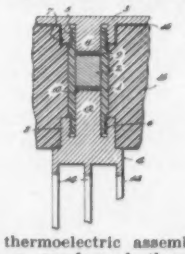


1. In a system of expansion control for a finned tube heat exchanger unit wherein a thin-wall tube initially extends loosely through a pack of closely spaced thin metal fins and has end portions exterior to the fin pack and is expanded by internal fluid pressure into tight or firm fit with the fins to produce a rigid structural unit with efficient heat transfer relation between the tube and the fins, the combination with fluid pressure supply means for expanding the tube. . . .

2,941,620. FILTER ELEMENT. William F. Thornburgh, Flint, Mich., assignor to General Motors Corp., Detroit, Mich.

A filter element for air cleaners and the like and having spaced and annular filter element supports and comprising, a filter unit having annular end plates, said filter unit including annular filter means and screen support means inwardly and outwardly of said annular filter means, said end plates being easily deformable and elastic and being secured to the opposite ends of said filter unit and sealing said filter element against the flow of air internally of said filter element and around said filter. . . .

2,942,051. REFRIGERATING APPARATUS. John Roeder, Jr., Benton Harbor, Mich., assignor to Whirlpool Corp., a corporation of Delaware.



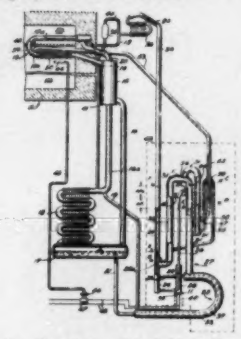
1. A thermoelectric assembly, comprising: a pre-formed thermoelectric element having spaced surfaces; a first contact member adjacent one of said surfaces; a second contact member adjacent the other of said surfaces; means at each of said surfaces making electrically conducting contact at all times between the surface and the corresponding contact member; and an enclosing substantially air impervious dielectric sleeve member surrounding said element and said conducting means at least one of said contact members being fastened adjustably to means associated with said sleeve member for movement toward said contact means to effect the electrically conducting contact between said one contact member and said contact means. . . .

DESIGNS

188,268. ISLAND TYPE REFRIGERATED DISPLAY CASE. Julius H. Rainwater, Atlanta, Ga., assignor to The Warren Co., Inc., Atlanta, Ga., a corporation of Georgia. . . .

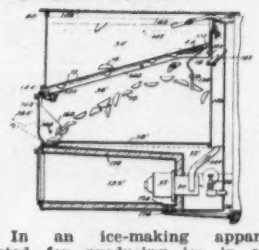
Week of June 28

2,942,431. ABSORPTION REFRIGERATION. Wilhelm Georg Kogel, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden, a corporation of Sweden.



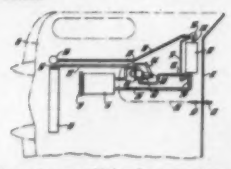
1. In the art of refrigeration with the aid of a refrigeration system in which absorption solution is circulated in a circuit, lifting solution in such circuit in a path of flow extending upwardly to a vapor space in the system, forming from the raised solution a liquid column having a liquid surface below the region at which raised liquid is introduced into said vapor space, flowing solution in said circuit in another path of flow from a region of said liquid column below the liquid surface thereof. . . .

2,942,433. DEFROSTING OF EVAPORATOR. Glenn Muffly, 1541 Crestview Dr., Springfield 32, Ohio.



2. In an ice-making apparatus adapted for producing ice in small pieces and releasing small pieces intact a water tank having an inclined bottom, an ice storage compartment located below said tank, and means for separating said pieces of ice from said water and delivering them to said storage compartment at a point below said inclined bottom of the tank and adjacent a higher portion thereof, whereby the higher portion of the stored ice is located below the higher portion of the tank bottom to conserve space. . . .

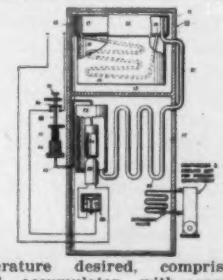
2,942,433. BY-PASS CONTROL IN AIR CONDITIONING SYSTEMS. John R. Holmes, Robert B. Mandy, and Fred D. Taylor, Lockport, N. Y., assignors to General Motors Corp., Detroit, Mich.



2. An air conditioning system comprising a compressor, condenser and evaporator connected for the flow of refrigerant, an expansion valve arranged to control the admission of refrigerant from said condenser into said evaporator, means including a thermostat adjacent to said evaporator and responsive to the temperature of the refrigerant discharged by said evaporator to said compressor, said thermostat being arranged to control said expansion valve. . . .

2,942,434. SECONDARY REFRIGERATION SYSTEM. Robert A. Moore, 325 Barton St., E., Hamilton, Ont., Can.

1. A secondary refrigeration system for a refrigerating compartment in which the refrigerant fluid has a boiling temperature below ambient and substantially equal to the refrigeration



temperature desired, comprising a closed accumulator with evaporator coils mounted in said compartment having sufficient capacity for accommodating all of said refrigerant fluid in its liquid state. . . .

(To Be Continued)

NEWS readers are invited to write to the editor giving their opinions on any subject of interest to the industry.

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SALES ENGINEER—to someone who needs a qualified top-level man. Age 35. College graduate. Registered P.E. Ohio. 12 years diversified experience covers all phases air conditioning and refrigeration - engineering - contracting - sales. Dissolving of present Carrier contracting division makes me available shortly. Resume furnished on request. BOX A6650, Air Conditioning, Heating & Refrigeration News.

POSITIONS AVAILABLE

SALESMEN WITH food sales background for commercial refrigeration sales position with established, aggressive Tyler dealer franchised in 24 California counties. Position offers opportunity to sell full line food and beverage equipment, with all possible selling aids. Monthly draw plus travel expenses. Openings in San Jose main office or branches in Stockton, Salinas, Oakland, South San Francisco, and San Raphael. Send complete resume. A-1 REFRIGERATION, 418 South Second Street, San Jose, California.

MANUFACTURERS' REPRESENTATIVE—exporter seeks connection with beverage cooler manufacturer also appliances, can handle twenty five coolers per month, give full details. ACME APPLIANCE CO., 3725 Spring Park Road, Jacksonville 7, Florida.

ENGINEER: EXCEPTIONAL opportunity for graduate engineer. Prefer experience in design and installation of refrigeration and air conditioning plants, or will consider training recent graduate. Must also be capable of handling correspondence. Location Milwaukee. Please submit complete resume with letter of application. VILTER INTERNATIONAL, INC., 2217 So. 1st Street, Milwaukee 7, Wisconsin.

EXPORT MANAGER for prominent manufacturer of air conditioning equipment with worldwide sales. Previous experience refrigeration field or technical educational background helpful. Must have travel experience, prefer multi-linguist, active selfstarter preferred. Location upstate New York. Submit resume and salary requirements. BOX A6645, Air Conditioning, Heating & Refrigeration News.

ROOM AIR conditioner "sales specialist" to represent fast growing Carrier distributor in the Midwest. Opportunity to make big earnings. Salary, commission expenses and generous fringe benefits. Send resume of experience and earnings. All replys confidential; our men know of this advertisement. Reply to BOX A6651, Air Conditioning, Heating & Refrigeration News.

RESIDENTIAL AIR conditioning and furnace salesman to represent Carrier distributor in central Indiana territory. An excellent program and the opportunity, for the right man, to make money. Send resume of experience and earnings. All replies confidential. Our men know of this advertisement. Reply to BOX A6652, Air Conditioning, Heating & Refrigeration News.

EQUIPMENT FOR SALE

ATTENTION REFRIGERATION Servicemen. Send for catalog listing values in refrigeration and air conditioning parts, relays, capacitors, compressors. Savings up to 50%. WALTER W STARR, 2833 Lincoln Ave., Chicago 13 Illinois.

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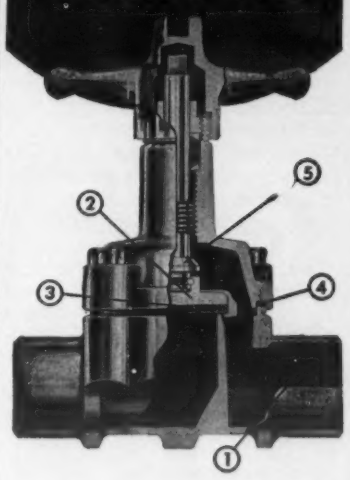

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Call Home and Turn Your Conditioner on From Anywhere In U. S.—It's Not a Dream

PITTSBURGH — To "telephone" your air conditioner—or for that matter, virtually any electric appliance—may appear as a fantastic dream, but it's not.

In fact, engineers of Westinghouse Electric Corp. have made it possible today.

Chris J. Witting, vice president, consumer products, said the company has developed a method of operating cooling and heating equipment, electric household appliances, and other electrical devices in the home by dial telephone from any location in the United States.

"As an example," he pointed out, "you are about to take a jet flight from New York to Los Angeles. You step into a telephone booth—make a call—and in a matter of seconds the air conditioner you turned off last week will be turned on, and your house will be cool upon arrival in a few hours."

Witting said the dial control system presently is embodied experimentally in an electric range which is touring the United States as part of a Westinghouse exhibit of future products for the home.

Westinghouse engineers say the equipment, commercially available through telephone companies, has innumerable uses about the home. But, at present, they have no plans for carrying the project beyond the experimental oven until market researchers check the customer potential for such apparatus.

Basic to the system, which operates with simplicity, is a relay box. Its size and the number of relays determine the number and kinds of things the remote control telephone will do. The Westinghouse executive explained the system as follows:

When the owner of the equipment leaves the home, he turns the equipment to automatic. Then from any dial telephone in the United States he can call his home number.

Next, he dials the code connecting him to the relay box. Another code number connects him to a specific appliance or device he wants to control, he pointed out.

One more number selects the point at which the setting is to be made, like operating the oven, turning off a light, turning on an air conditioner, or defrosting a refrigerator, according to Witting.

The touring range has six operating positions—four for oven temperature selections, a fifth to activate the oven broil unit, and a sixth for turning the appliance off.

Air Force Study--

(Continued from Page 1, Col. 2)

could be applied with complete validity to civilian installations of year-round air conditioning, it is cautioned.

The thinking here is that military occupants of Capehart houses, who do not have to pay the utility bills themselves, are much less concerned about operating costs than a private individual would be and therefore may not attempt to obtain economical operation.

Under study are Capehart houses at six Air Force bases: Little Rock, Seymour Johnson, Columbus, Charleston, Blytheville, and Dyess. The first three involve residential heat pumps; conventional electric air conditioning-gas furnace systems are being studied at the three last-named bases.

Work of collecting and analyzing data is being conducted by the National Bureau of Standards for the Air Force as well as the Army and Navy. The latter two branches of the service, however, have few air conditioned Capehart houses as compared with the Air Force.

Chief purpose of the project is to determine factual data on power requirements for all-electric and gas-electric heating and cooling systems, comparing energy use and coefficient of performance under actual conditions in occupied housing, the Air Force explains.

At Little Rock AFB, for example, demand meters have been installed in 16 houses to record separately power consumption of the electric range, electric water heater, heat pump, and the entire house.

These figures are being correlated with outdoor temperature readings taken at three locations in the base area.

Peerless--

(Continued from Page 1, Col. 1)

Ohio, which also uses the Moncrief trade name. The Atlanta firm has been in business under that name for about 60 years.

With the merger, Peerless Corp. will now have wholesaling manufacturing and/or warehousing facilities here, at Dowagiac, Mich., (Round Oak Div.), Tampa, Fla., Detroit, and Atlanta.

Peerless products which will be available in Atlanta include a complete line of gas, oil, and coal-fired heating equipment, central air conditioning for commercial and residential use, and the all-electric Peerless heat pumps, both remote and packaged.

Peerless also manufactures prefabricated duct pipe and fittings sold under the trade name "Master Fit."

O. U. Mutz, vice president of Peerless Corp., has voiced a strong opinion that all Peerless customers will receive many benefits from this merger, both in service and product offering.

York--

(Continued from Page 1, Col. 5)

compressor units, and condensing units distributed to original equipment manufacturers, and the Mobile Products Group, including automotive air conditioning compressors, truck refrigeration systems, and rail car refrigeration.

For the past two years Ammel has served York as sales manager, O.E.M. Products. Prior to joining York he was with Kelvinator Div. of American Motors Corp. for 21 years.

ARW Announces New Members

CLEVELAND—The Air Conditioning & Refrigeration Wholesalers announced that Harold B. Clyde, Debes Refrigeration Supply Co. here, and Boone Crisp, Southwest Air-Ref Supply Co., San Antonio, have been approved for membership in the association.

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